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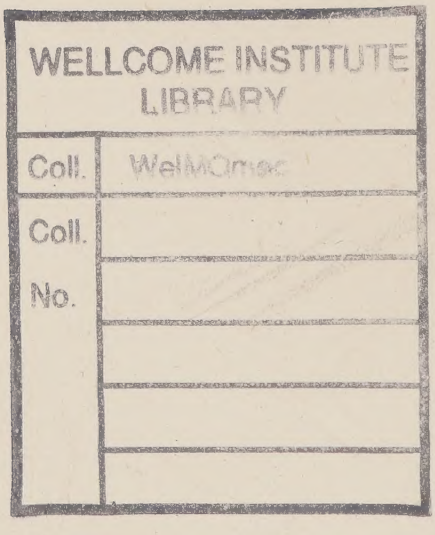

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ARCHIVES OF LARYNGOLOGY.

MICROSCOPICAL STUDY OF PAPILLOMA OF THE LARYNX.

By LOUIS ELSBERG, M.D.,

NEW YORK.

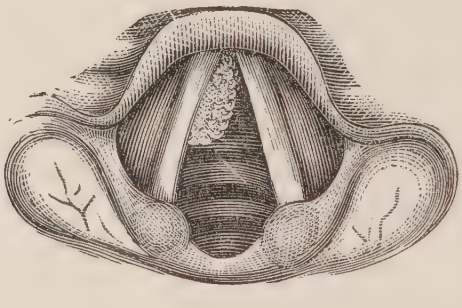
ALL other laryngeal tumors together occur less frequently than papillomata. Of 310 cases of intralaryngeal morbid growths that have come under my observation, I believe 163 to have been papillomatous, although the diagnosis many times was made clinically only, *i. e.*, without microscopical examination. The study of such neoplasms is on account of their frequency of occurrence, and often observed recurrence, of much practical importance; it is also of great interest from a histogenetic point of view.

About fourteen years ago I extirpated the most extensive laryngeal papillomatous growth that has become known, and previous to complete removal by laryngo-fission, I had taken away large masses *per vias naturales*, the microscopical examination of which, together with the history of the case, is published in the Prize Essay of the American Medical Association for 1865. I reproduced by means of the camera lucida what the microscope, then at my disposal, revealed; and in that essay emphasized the proof which it supplied of the assertion of Virchow that sometimes, abnormally at least, epithelium is developed from progressive metamorphosis of connective-tissue. Although the wording of this assertion must be slightly modified to express what actually takes place, the correctness of the observation upon which

it was based is unquestionable. Since that time instruments and methods have been vastly improved—my eyes have also become more educated—and the result of the study which I now publish will contribute, I trust, to the final settlement of the question of the pathological new growth of connective-tissue and epithelium.

The clinical history of the following case may be told in very few words:

Mrs. B., 36 years old, mother of three children, came to me June 5, 1875, on account of aphonia of more than two years standing, which had lately become accompanied with shortness of breath on slight exertion. She had previously been remarkably healthy, at all events, never suffered from anything whatever that could be traced to influence her present trouble. This had come on by gradually increasing hoarseness, without any assignable cause. She had become steadily worse in spite of the medicinal treatment of three country and two city doctors. On examination, the condition represented in the accompanying wood-cut was seen; viz., a papillomatous growth of the size of a coffee-bean, its flat surface attached to the anterior portion of the right vocal band and its free convex surface studded with numerous small berries.



On June 8th, the tumor was removed by evulsion with my forceps, and the patient after three weeks more of local treatment went home cured. No recurrence has taken place, voice and breathing are perfectly good at this date (March, 1880).

The importance of either escharotic, astringent, alterative or soothing medication for some time after the mechanical operation of intra-laryngeal growths is, I think, not sufficiently appreciated. Many recurrences I believe to be due to the neglect of judicious after-treatment.

For the purpose of microscopical study, the tumor was hardened in a one-half per cent. solution of chromic acid, afterward deprived of its water by strong alcohol, imbedded in a mixture of paraffine and wax (8 to 1), and cut with a razor into thin slices; the specimens were stained with an ammoniacal carmine solution.

The microscope confirmed the diagnosis of the nature of the tumor, made by means of a laryngoscope *in situ*, and by the naked eye after removal, *i.e.*, it was a true papilloma.

Examined with low powers, viz., with an amplification of from 100 to 200 diameters, a central mass of connective-tissue is seen, abundantly provided with large blood-vessels, mainly veins and capillaries, some choked with blood. Tapering prolongations extend from this mass outward toward the periphery of the tumor and the papillæ, and terminate in a large number of minute finger-like ramifications consisting of connective-tissue and capillary blood-vessels. The central mass with its prolongations, is invested with a thick stratified epithelium, the lowest portion of which, *i.e.*, the one nearest the connective-tissue, is a row of columnar epithelia; the main mass cuboidal, and the peripheral portion flattened epithelia. The latter exhibit in some places irregular erosions which produce a rather jagged outline. Corresponding to the papillæ the epithelial layers form rounded protrusions, the valleys between the papillæ representing the main mass of epithelial structure. The papillæ are of relatively large size; and in different specimens longitudinal, oblique and transverse sections are met with. Some of the latter show roundish fields of connective tissue with cross sections of capillaries, surrounded by a wreath of columnar epithelia only; the valleys being, here as a matter of course, filled with cuboidal epithelium only.

Higher powers of the microscope, say f. i. 500 or 600 diameters, show the fibrous connective-tissue in the central portion of the tumor to be made up of interwoven, longitudinal and transverse delicate bundles of fibres, the relatively thinner bundles being nearer the periphery. Most of the papillæ contain predominantly the variety of connective-tissue called myxomatous. Within the connective-tissue

bundles are seen numerous bioplastids,* bodies either single or in chains, either roundish or oblong and fusiform, which are the so-called connective-tissue corpuscles. In the myxomatous portion, the fibres are more delicate than in the fibrous portion, and are in many instances arranged in the shape of a delicate network, at the nodes, or points of intersection of the threads, of which small oblong nuclei are met with, while the meshes of this myxomatous reticulum contain either a finely granular basis-substance or globular bioplastids of varying size. The blood-vessels, which as before mentioned, are very numerous and very large, wind their way between the bundles; and some of them have a very narrow but distinct muscular coat, visible not only in transverse section, but also when the razor has struck the middle coat, in front view: such vessels I regard as veins. The endothelial coat of the capillaries is well developed; at some places the endothelia are clustered together with marks of division within the cluster pointing to a proliferation of the endothelial wall. Most of the capillaries are surrounded by a somewhat denser fibrous connective-tissue even in the myxomatous portion of the tumor. This layer of fibrous connective-tissue constitutes an adventitia of the capillary blood-vessels more distinct than is ordinarily met with in normal tissues.

The boundary line between connective-tissue and epithelium at many places in the various specimens is sharply defined by a narrow zone of dense fibres, doubtless identical with what has been termed the basement membrane; at other places, on the contrary, such a bounding zone is absent, and there is a gradual transition of connective-tissue into epithelium. In the latter cases, the epithelial bodies send filamentous outgrowths or offshoots into the reticular portion of the myxomatous tissue, and as both the meshes of the latter and the bodies of the former contain numerous nuclei, it is impossible to tell where one terminates and the other begins. Where a bounding layer of connective-tissue

* I use the word "bioplastid" or "plastid" to denote simply a distinct lump or mass of living matter; I use it instead of the expression "protoplasmic body," because the term protoplasm has had several different meanings, and instead of the word "cell" because that would be a misnomer.

exists, the columnar epithelia are well defined; where such a zone is absent, they are on the contrary ill defined, several rows being sometimes piled up, each epithelium of a more or less fusiform shape and very narrow. Surrounding each individual epithelial body, whether spindle-shaped or well defined, and separating each from all the others, there are very narrow light rims, pierced by extremely delicate threads which with a magnifying power of 500 diameters are on the limit of the visible. The main mass of epithelium consists of cuboidal elements which are polyhedral and separated from each other by a light rim, the so-called cement substance, traversed by a large number of delicate threads, the thorns of the late Max Schultze of Bonn. Whenever the razor has reached the surface of a cuboidal element in front section, the appearance of what Max Schultze termed "*Stachel und Riff Zellen*," spinous and dentate cells—is produced, *i.e.*, the epithelium looks as if studded with short hairs or thorns. The cuboidal epithelia nearest the outer limit exhibit the cement substance and the thorns less markedly and in the layer of flattened epithelium at the periphery, cement substance and thorns are scarcely recognizable.

Most of the cuboidal epithelia hold in their interior a nucleus, the aspect of which is, however, various. We see pale nuclei, indistinctly bounded by a faint membrane, enclosing granules about the same size as the granules in the rest of the epithelium. Again, we see nuclei having a very distinct, even a granular, nuclar membrane, containing from two to five coarser shining granules, the so-called nucleoli. Not infrequently an epithelial element has two nuclei of which one is finely, the other coarsely granular; or both may be coarsely granular, differing from each other only in size and in the number of granules they contain. Furthermore, we meet with bright nuclei larger than the ordinary size, containing a number of very shining, nearly homogeneous granules closely packed together, either quite or nearly centrally, or else arranged in a crescent-shaped group at the periphery of the nucleus. Occasionally a nucleus constitutes an almost homogeneous shining mass; and again, a

mass split up into two or three relatively large lumps or clusters of granules. Around compact nuclei a broad light rim is sometimes visible, evidently a vacuole, *i.e.*, a closed space filled with a liquid. Large vacuoles in the centres of some epithelia are seen perfectly empty (presumably because the nucleus that was in them has fallen out or been dragged out by the razor).

Instead of the so-called thorns seen in cement substance, frequently slender spindles are wedged in between two epithelial elements, of a higher refracting power than the latter. Or a shining spindle-shaped corpuscle lies close against one wall of an epithelial body, while the cement substance at the opposite side of the spindle is slightly distended and pierced by thorns running at right angles to the spindle. In other instances, the thorns between two epithelial walls seem to have run together into an almost square or oblong, homogeneous, shining rod; the cement substance, more or less broadened, surrounding the rod on one or both sides and being pierced with other slender threads or thorns. Again, compact club-like or pear-shaped shining bodies, or a number of shining granules in clusters of either a pear or spindle shape are seen in the considerably distended cement substance between two epithelia. These masses sometimes reach and sometimes surpass in size that of large epithelial nuclei. They are surrounded by a light rim which, opposite a part or sometimes the whole of their periphery shows minute granules or delicate thorns. Lastly, pale or coarsely granular bodies are seen wedged in between two or three neighboring epithelia, smaller in size than the latter, some being devoid of, and some possessing, oblong nuclei. These various formations in the cement substance are found in largest numbers in the vicinity of the papillæ. They occur in the cement substance of columnar as well as in that of cuboidal epithelia. Very near the periphery of the tumor they are scanty, but absolutely absent in the outermost layer of flat epithelium only.

The bearing of the examination of the papillary tumor under consideration upon the question how pathologica new growth takes place, will soon be seen. The interpreta-

tion requires high powers of the microscope. I have used two excellent objectives, viz., a $\frac{1}{12}$ immersion of Tolles of Boston, and a No. 12 immersion of Verick of Paris.

The fibrous portion of the connective-tissue, viewed with one of these objectives, is seen to be composed of extremely delicate spindles, which when arranged lengthwise, have the aspect of fibres, while when associated together in a bunch of a certain bulk, constitute what is termed a connective-tissue bundle. The spindles are closely packed together, nevertheless they are separated from each other in all directions by extremely narrow light rims, analogous to those which we are accustomed to see in epithelial formations and which we must interpret here as we do in epithelium, as cement substance. To the presence of cement substance in connective-tissue bundles, Vladimir Tomsa first drew attention. And by closely watching these light rims, we certainly detect in them slender threads analogous to the thorns long known to exist in the cement substance of epithelium. The spindles themselves, representing without doubt what we call "glue yielding basis substance" * of connective-tissue, are by no means homogeneous; in the thinnest layers of the bundles in the central portion of the tumor they exhibit a delicate but distinct network, the threads of which are grayish, the carmine coloring being confined to the meshes. Interspersed between the spindles is seen a large number of multi-caudate corpuscles of reticular structure, the peripheral sprouts of which tend toward the spindles and inosculate with the network of the basis substance.

The discovery by Carl Heitzmann of the reticular structure of all so-called protoplasm is now well-known. Originally announced in the Transactions of the Vienna Academy of Sciences in 1873, I have reported it in the Transactions of the American Medical Association in 1875, it has been demonstrated by Heitzmann for years in his histological

* It is to be much regretted that histologists do not agree as to the name of the constituent parts of a tissue. In regard to the epithelium, the German "*Kitt-substanz*" or the English "Cement substance" is generally used; but in regard to connective-tissue what is known as "Basis substance," is called by some matrix, by others intercellular substance, by still others intermediate, interstitial, basement and ground substance.

institute in this city, and published in numerous articles by himself and students, and it is acknowledged by many of the best microscopists here and abroad. I have found a network structure in colored blood-corpuscles even; but the existence of a network in the basis substance of connective-tissue, as claimed by Heitzmann, had not hitherto been recognized as far as I know by anyone else. Now, in the spindles of connective-tissue of which the central mass of this papilloma is composed, it is certainly present; and I may add that it is not necessary to employ complicated and delicate staining methods for bringing it into view. It is distinctly visible in the specimens under consideration; and they are simply stained with ammoniacal carmine solution.

The peripheral portion of the connective tissue is, as has already been stated, of a prevailing myxomatous structure. Here the spindles constituting the basis substance, instead of being packed together to form bundles, are associated in the shape of a coarse reticulum, holding numerous small corpuscles, mainly at the points of intersection; but the larger meshes encircled by the spindles, also, contain a number of similar corpuscles or else a light, so-called myxomatous basis substance. High powers of the microscope reveal a delicate network structure in the inside fields of the myxomatous basis substance as well as in the encircling spindles; and this network is in uninterrupted connection with the corpuscles at the junction of the spindles and those contained in some of the meshes.

Embryology teaches us that in the development of connective tissue, after the stage of indifference—characterized by the presence of embryonic or medullary elements only—the myxomatous variety is the one first formed, and that basis substance invariably arises from former medullary elements. Max Schultze asserted that the living matter perishes whenever the transformation of medullary elements into basis substance takes place; Heitzmann, on the contrary, claims that in this transformation no living matter perishes, but that all that occurs, is simply a chemical or physical alteration of the formerly liquid lifeless substance, mixed with the living matter, into a more solid lifeless basis

substance. His argument is as follows: "The network both in so-called "protoplasm" and in "basis substance" is the living matter proper; the meshes of the network in so-called protoplasm hold a lifeless fluid material, in basis substance a lifeless solid material, which in the case of connective tissue is called collagen, yielding gelatine, glutin or glue; there is, therefore, no essential difference between so-called protoplasm and connective tissue basis substance, except that the former contains besides the living matter a certain amount of fluid, the latter besides the living matter a certain amount of glue-yielding material. No differential chemical formula exists for these two materials; the only distinction that we can make between them is one of optical appearance. And when medullary elements are transformed into myxomatous basis substance, the change is marked only by a difference in the appearance of the part that is called myxomatous basis substance, a difference due to an increase of its refracting power on account of which its intimate structure becomes almost or quite "invisible." This view is unquestionably the correct one, as can be proved by examining different stages of a growing tissue. In our papilloma, only a few meshes of the myxomatous tissue have advanced to the point at which an indistinct granulation of the basis substance is produced, *i.e.*, at which the network of living matter is almost entirely concealed. Most of the fields of the basis substance have proceeded in development only so far as still to admit of a demonstration of the reticular structure of the basis substance.

The next stage in the embryonal development of connective tissue after the production of the myxomatous variety is the change of this into the fibrous. I believe most good observers now-a-days agree that one variety of a tissue is never directly changed into another one, but that the tissue is invariably reduced again to its embryonic condition before the formation of the other variety takes place. In my sections of the tumor there are aggregated at certain points medullary elements, of which it is impossible to say whether they were about to form a myxomatous or a more

advanced fibrous connective tissue. There are places enough, however, which plainly illustrate the manner in which medullary elements change into fibrous basis substances. This is briefly as follows: The medullary elements become elongated, spindle-shaped, and split into a number of very fine small spindles, which being separated from each other by narrow light rims, remain connected by means of delicate filaments; the spindles first become pale, then they acquire an increased refracting power, by which the reticular structure in their interior is to a certain extent concealed; thus the formation of fibrous basis substance is accomplished. The fact that the myxomatous portion of the connective tissue is largely, the fibrous portion, on the contrary, scantily supplied with capillary blood-vessels, involves a destruction of many of these in the transformation of the former into the latter. This is brought about by an exuberant proliferation of the endotheliæ of the capillaries. By such a proliferation the calibre of the capillary is more and more encroached upon until it is lost; the capillary is then transformed into a solid cord entirely composed of medullary elements; which finally undergo changes looking to the formation of fibrous basis substance exactly as other medullary elements.

The most peripheral portion of the connective tissue is in connection with the epithelium. Where a sharp line of demarkation exists, the highest powers of the microscope reveal either a single layer of connective tissue spindles or a thin bundle of such spindles, serving as a basis for the epithelia to rest on. This terminal stratum is in close connection with the subjacent reticulum of myxomatous tissue and with the capillary blood-vessels nearest the periphery. The blood-vessels not infrequently approach the stratum so near that only a very narrow light rim is left between their wall and the epithelium, and this rim is invariably traversed by delicate grayish filaments. On the opposite side the stratum is in close contact with the peripheral threads of the network of fully developed columnar epithelia. In the case of not fully developed epithelial elements, as intimate a connection is established by shining, homogeneous

spindle-shaped prolongations which go from the terminal stratum into the epithelial layer as either an irregular reticulum or rows of filaments, arranged in a more or less regularly vertical direction, around a retriculated corpuscle containing in its interior one or more small reticulated bodies of the aspect of nuclei. Thus, such a retculated corpuscle, *i. e.*, a not yet fully developed epithelium, is enclosed in the spindle in a similar manner as that in which the cement substance surrounds fully developed epithelia. The difference is that the spindles are homogeneous and shining, of the same refracting power as the granules and threads of living matter, while the cement substance is a pale layer without any refracting power. Evidently the spindles are compact masses of living matter from which future epithelia arise, while the cement substance proper is a lifeless, horny material, containing only very little living matter in the shape of the minute thorns that traverse it.

Where there is no sharp demarkation between connective tissue and epithelium, even the highest powers of the microscope fail to demonstrate where one terminates and the other begins. Only the presence of capillary blood-vessels furnishes some guidance for the determination of what is connective tissue. In the region supplied with blood-vessels there are a few meshes of light myxomatous basis substance; in the immediate neighborhood, however, there are large territories with bioplastids containing one or more nuclei; and no distinguishing feature between connective tissue and epithelium can be detected. The myxomatous reticulum passes directly into a reticulum identical with the epithelial; the narrow reticulum of shining spindle-shaped bodies gradually passes into the light cement substance of fully developed epithelia; in other words, the medullary or embryonal elements are gradually transformed into epithelia by becoming polyhedral, regular and separated from each other by a correspondingly regular cement substance. This gradual change I described and figured fourteen years ago, (*l. c.*) as seen with an amplification of 200 diameters. Obviously the formation of cement substance is a secondary one and results from the solidification of the lifeless fluid portion of the medullary elements.

In the lower strata of epithelia we most frequently meet with the appearances in the cement substance which I have already described as seen with a power of 500 diameters, and which I have figured as seen with a power of 1,200 diameters in Figures 1 and 2 of the accompanying lithographed plate. The high power reveals in the cement substance, masses of living matter which tend unquestionably toward the formation of new epithelial bodies. The initial stage of such formation is a growth and confluence of the thorns into rods or spindle-shaped masses which remain in connection with neighboring epithelia by means of delicate threads. (See Fig. 2, e–k.) Such a change in the bulk of the living matter is possible only after the liquefaction of the horny cement substance, which itself may possibly serve as part pabulum for the newly forming epithelia. An increase in the bulk of the thorns is invariably accompanied with a widening of the space occupied by the cement substance. Of course, the larger the formations of living matter between the epithelia become, the larger must become the space in which they are located; and this enlargement often leads to the production of bay-like excavations along the walls of contiguous epithelia. Such excavations sometimes hold irregular clusters of bodies, which in their optical behavior are identical with the nuclei of epithelia generally. The preliminary stage in the development of a new epithelial body is completed by the appearance of a coarsely granular bioplastid, between the old finely granular epithelia and the appearance of lines of new cement substance around the newly formed body. (See Fig. 2, l.)

Changes similar to those that go on in the cement substance also occur in the interior of the nuclei. Some nuclei are found to contain several bright and homogeneous lumps of living matter; others are themselves changed each into an irregular homogeneous mass, and in this case invariably surrounded by either a light rim (Fig. 2, d,) or a vacuole (Fig. 2, a.) As long as a narrow light rim is present around the nucleus, a connection by means of slender radiating filaments traversing this rim exists between the enlarged nucleus and the network of living matter in the surrounding

epithelial body; but this connection is broken when the surrounding space becomes a so-called vacuole, produced in the process of dying by intense contraction of the bioplasson and an accumulation of fluid. Such vacuoles, therefore, either containing nuclei or empty, must be considered to be produced by death or to be artefacts due to the preparation of the specimen for microscopical examination. Nuclei of a dumb-bell shape, or two nuclei within one epithelial body, (as seen in Fig. 2, c), have long been known as common features in epithelia. They certainly seem to point to a multiplication of nuclei, but I am unable to say whether they have anything to do with new formation of epithelia or not.

As an *addendum* I may state that I have found in microscopical sections made from a papilloma of the penis, a so-called venereal wart, the same characteristic features that I have described as belonging to papilloma of the larynx.

The formerly unquestioned "cell" views of histologists are giving way to a more correct appreciation of the living matter of the body. In pathology as in physiology, the cell doctrine has lead to great advances in accurate knowledge as an aid and means of research, but it has outlived its usefulness. Instead of adhering to Virchow's comparison "that every higher organism is like an organized social community or state, in which the individual citizens are represented by the cells, each having a certain morphological and physiological autonomy, although on the other hand interdependent and subject to the laws of the whole," we now compare the body to a machine, in which, though there are single parts, these are materially connected together, and no part is at all autonomous, but all combine to make up one individual. According to the former view the body is composed of colonies of amœbæ; according to the latter, the body is composed of one complex amœba. I have named this biological doctrine, which is based on Heitzmann's discoveries, the bioplasson doctrine, using the word "bioplasson" only as a technical synonym for the two words "living matter;" and I use the term "bioplastid" or simply "plastid" to denote a "lump of living

matter" or a so-called "protoplasmic body," or a form-element, a formerly so-called "cell." Heitzmann has discovered that (1), the living matter of the organism is uninterruptedly connected in all constituent tissues, in the shape of a network within all corpuscular elements of the tissue, of a network within the basis substance of connective-tissue and of delicate filaments within the cement substance of epithelium; and (2), the living matter in its elementary shape is a granule which, after increasing in size and taking up a certain amount of liquid, exhibits first vacuoles and afterward a network of threads of living matter (the reticular condition constituting a stage in its development, in which it is usually called protoplasm). I am not aware that either of these propositions have heretofore been tested or illustrated by the investigation of a morbid growth; my examination of the papilloma described, prove both.

As to the first point, a reticulum is demonstrable in the bioplastids of the connective-tissue portion of the papilloma, the so-called connective-tissue corpuscles, as well as in those termed epithelia; a reticulum is visible in the basis substance of both varieties of the connective-tissue of the tumor, *i.e.*, the myxomatous and the fibrous, without application of any reagent except ammoniacal carmine staining; and a filamentous union of the bioplastids within the connective-tissue with the epithelia on the one hand and with the adjacent basis substance on the other, and also of contiguous epithelia, is plainly marked.

The second point is illustrated by the occurrences both at the boundary between connective-tissue and epithelium, and within the cement substance. Especially the latter presents us with a complete series of originally homogeneous and apparently structureless lumps of living matter which have sprung from simply enlarged thorns and pass through various phases until they are epithelia. A. Biesiadecki was the first to draw attention to the presence of shining spindle-shaped bodies within the cement substance of inflamed (eczematous) skin, in which an active new growth of epithelia takes place; but he claimed that these spindle-shaped bodies came from the connective-tissue; and the most recent

writer E. Klein, holds a similar opinion, for he describes and figures in his *Atlas of Histology*, in the cement substance of epithelium from the tail of a tadpole, what he calls "branched cells" of connective-tissue which "are seen to extend with their processes amongst the epithelial cells." My observed series, disproves, of course, any such opinion. The originally solid spindles are, by repeated vacuolation and the resulting trabeculation, transformed into reticulated bodies which become regular epithelia, and in the centres of which more solid masses of living matter remain as nuclei.

Just as I was enabled fourteen years ago to confirm Virchow's observation that in pathological conditions epithelia may spring from connective-tissue, so I can now confute the statement of recent authors, (Thiersch, Billroth, Waldeyer, and others), that epithelium, being a product of the epiblast and hypoblast of the embryo, and connective-tissue, being a product of the embryonal mesoblast, the two tissues are so entirely distinct and independent of each other, that epithelium can originate from former epithelium only, and never from connective-tissue. Embryology demonstrates that both connective-tissue and epithelium arise from medullary or so-called indifferent elements; and my researches prove that in the morbid growth of epithelium at the boundary between epithelium and connective-tissue, epithelia originate from medullary elements which cannot be distinguished from such as give rise to the connective-tissue. In both cases the substratum of newly formed medullary elements is the living matter. The nuclei of epithelia increase in size and produce new nuclei, they may perhaps also produce new epithelia; but I have no proof of the correctness of Virchow's assertion that the epithelia multiply by simple division.

What I have proved in regard to the new formation of epithelia is that, (1), Epithelium multiplies from medullary elements not distinguishable from those that form connective-tissue at the boundary between these two tissues; (2), Epithelium multiplies from the new growth of medullary elements which originate in the living matter, (the so-called thorns) within the cement substance.

EXPLANATION OF FIGURES.

FIG. 1. Oblique Section of a Papilla with surrounding wreath of columnar epithelia, x 1200 diam.

a. bundle of fibrous-connective tissue composed of delicate spindles of basis substance showing a reticular structure.

b. corpuscle between the spindles, connected by slender filaments with the network of the basis substance.

c. myxomatous portion of connective tissue at the periphery of the papilla made up of a relatively coarse network of fibres and spindles with oblong nuclei at the points of intersection, and a pale granular basis substance in the meshes.

d. capillary blood vessel cut across.

e. layer of connective tissue at the base of the columnar epithelia.

f, f. shining spindle-shaped prolongations of the layer *e.* insinuated between the epithelia *g.*

g. columnar epithelium.

h. myxomatous connective tissue, containing in its meshes nucleated bodies, the so-called medullary elements, and demonstrating the transition of connective tissue into epithelium.

FIG. 2. A number of Cuboidal Epithelia from the neighborhood of the columnar epithelia of fig. 1., x 1200 diam.

a. nucleus of an epithelial element surrounded by a light space, a so-called vacuole.

b. empty vacuole (nucleus dropped out).

c. epithelium with two nuclei.

d. epithelium with a bright, homogeneous nucleus, indicating increase of living matter.

e. thorns (filaments of living matter) in the cement substance in connection with the threads of the network within the epithelia.

f. thorns increased in size, some of them transformed into shining granules.

g. enlarged thorns united into a shining, spindle-shaped body.

h. a large pear-shaped body, surrounded by cement substance, between epithelia, formed like the body *g* out of thorns by increase of the living matter.

i. rows of lumps and rods of a similar origin.

k. medullary elements contained in a considerably distended space between the epithelia, a space enlarged from that originally occupied only by a narrow cement substance.

l. newly formed epithelium wedged in between the old.

ON OPERATIONS IN THE PHARYNGO-NASAL SPACE.

By Prof. Dr. VOLTOLINI,

BRESLAU.

(Translated.)

I AM anxious to call the attention of all who practice rhinoscopal surgery to the great advantages to be derived from the use of the new palate-hook, which I have described and figured in my work on Rhinoscopy and Pharyngoscopy.* Formerly I recommended Türck's "loop" and Löri's "squeezers" for urgent operations, but the palate-hook is preferable to these two instruments because it widens the pharyngo-nasal space more than they, and its employment is more simple and accomplishes the desired object more quickly. As a matter of course, it is superior to the device of passing by means of Bellocque's tube, a tape through either or each side of the nose, which coming out of the mouth is to pull the velum forward and downward. Not only can the tape in many cases be passed through neither side on account of narrowness of the passage, or because it is blocked by the very tumor that is to be operated upon, but under the best of circumstances the tape cannot take hold of the palate in its whole width, and the free portions will arch backward and interfere with inspection of the naso-pharynx. All who have operated much in that space know how great is the power with which the velum can tend backward. The palate-hook pulls upon the velum in its entire extent; but is to be used not timidly, but boldly and confidently. Unsteady handling increases the irritability of the patient. In case the velum's

* Die Rhinoscopie und Pharyngoscopie. Breslau, E. Morgenstern, 1879, p. 17, Fig. 4.

position is found to be close to the posterior pharyngeal wall, the palate-hook must not be anxiously moved about in the endeavor to get behind. Such probing may scratch the parts and make them bleed. The velum should first be relaxed by physiological manœuvres, as by the patient's phonating "*on.*" When the soft palate loosens, the hook should quickly be introduced behind. Instead of further details I will illustrate its use by relating a case in point.

Dr. Taczanowski of Warsaw, brought to me a young woman from St. Petersburgh to be operated upon. For years she had had no air through the left nasal passage and suffered all the consequences of such occlusion of the nose. The obstruction was caused by a number of ordinary nasal polypi and a large pharyngo-nasal polypus, which grew rather far down into the naso-pharynx. The lady was so sensitive and irritable that she had a number of hysterical paroxysms when I operated gently and cautiously upon the nasal polypi, by means of the galvano-cautery loop introduced through my speculum into the nose *from the front.* In spite of repeated attempts, and although I had already removed the polypus from the nose, I could not get the loop around the pharyngo-nasal tumor from the front; this, therefore, had to be accomplished by means of posterior rhinoscopy. Without the palate-hook I could not even see the tumor, as the velum was arched backward very much. The lady tolerated the palate-hook unexpectedly well. I strongly pulled the velum forward, the instrument being held near the left corner of the mouth, then I depressed the handle of the instrument down to the lower teeth and placed it firmly into the hand of Dr. Taczanowski, who pushed the extremity of the handle slightly downward, and at the same time pulled it a little outward. All this was so well borne that I succeeded in the first sitting in removing half of the polypus by the loop through the mouth. The remainder was removed during a second sitting, so that the whole of the large pharyngo-nasal tumor was extirpated in two visits. The operations were performed, with direct sunlight, with a steel-wire loop and tube bent upward. The tumor was caught in the loop, under the guidance of the mirror.

ON CRICOID PERICHONDRITIS CAUSED BY DECUBITUS.

By Prof. C. GERHARDT,

WÜRZBURG.

(Translated).

DITTRICH, in his excellent essay on Perichondritis laryngea,* mentions that in cases of an abscess about the plate of the cricoid cartilage which has opened toward the pharynx, an ulcer is very often found on the posterior pharyngeal wall corresponding accurately to the denuded portion of the cricoid; and toward the end of the essay, when discussing the connection between tuberculosis and perichondritis, he makes the positive assertion that the cause is "decubitus, in consequence of the pressure of the cricoid cartilage (particularly if ossified) upon the soft parts in front of the vertebral column." It is also believed that in the typhoid process inflammation of the perichondrium is due to this kind of internal decubitus, *i.e.*, pressure of the plate of the cricoid against the vertebræ. Such an opinion has found expression in the best and latest works, as Ziemssen's,† Stœrk's,‡ etc.; and if it be correct, we must almost necessarily find perichondritis to occur in aged persons, who through paralysis or disease of the locomotor organs are compelled to lie constantly on their back and have become greatly debilitated. Two hospital cases have recently come under my observation which are worth recording from this

* Prager Vierteljahrschrift, 1850, vol. 27, p. 117, *et seq.*

† Handbuch der speciellen Pathologie, vol. iv, p. 333.

‡ Klinik der Krankheiten des Kehlkopfes. Stuttgardt, 1880.

point of view, as they illustrate the combination of these factors.

Case 1.—Johann Dœll, æt. 36, had had in February, 1878, his left thigh amputated on account of an incurable inflammation of the knee-joint. In the middle of May following, symptoms of vertebral caries appeared, which in September, became more clearly developed. Since the beginning of November, he has been continuously confined to the bed, and, on November 22d, was removed into the medical ward. At that time the lower half of his body was completely paralysed and anæsthetic up to the sixth rib. There was already a bedsore on the back and scrotum. Electrical contractility of both lower extremities was entirely absent with either kind of current applied externally, but was easily induced by introducing a needle into the muscles; bladder paralysed. The whole vertebral column was greatly lordotic, the spinous processes of the seventh cervical and first dorsal projected, and on pressure were painful. For the last eight days, on swallowing, a sense of compression has been felt about the region of the larynx. Inspection showed the space between uvula and posterior pharyngeal wall to be remarkably small.

A few days later I found with the laryngoscope considerable œdema of the posterior wall of the larynx, and particularly of the mucous membrane of the right arytenoid cartilage. On December 9th, dysphagia had become so great that not even liquids could be swallowed; henceforth nourishment was given by the pharyngeal catheter, after each introduction of which swallowing became a trifle easier. There was now frequent, almost constant, cough with but little phlegmy expectoration. The laryngscope showed increase of the œdema, no ulcer could be seen. On the 11th, he died.

Post-mortem: The body of a vertebra at the junction of dorsal and cervical was found entirely destroyed and the dura mater thickened in front firmly attached to the vertebræ by fungoid granulation tissue; the spinal cord atrophied, softened with indistinct marking, especially at the anterior horns; the pia mater containing yellow gelatinous exudation.

There was putrid bronchitis, with remains of food in the bronchi.

On opening the œsophagus, the border of the cricoid cartilage was seen protruding free and necrotic from a small abscess sit-

uated near the median line in the front wall of the œsophagus. The right arytenoid cartilage was pushed forward and to the left, the right vocal band dislocated. On the opposite wall of the pharynx was a pus covered ulcer, and around this, extensive gelatinous infiltration of the submucous connective tissue. The mucous membrane of the ventricle of Morgagni was œdematous, as was also the whole right side of the larynx.

The conditions in this case were exceedingly favorable for the production of cricoid perichondritis, viz.: lordosis of the cervical vertebræ, their bodies being pushed against the larynx; seat of complete spinal paralysis, high up; and increase of the difficulty of moving the body on account of the loss of a limb. It is a well known peculiarity of cervical paraplegia to cause cough and dypnœa,* though the organs of respiration themselves are not demonstrably affected. This case shows that at least in some diseases of the cervical vertebræ, respiratory disturbances may depend upon great morbid changes in the larynx. The symptoms of perichondritis were represented only by cough, dypnœa, dysphagia and œdema of the posterior laryngeal wall. Nothing in addition could be seen by the laryngscope. Indeed, we must not expect from the mirror much help in diagnosis in these cases of retro-perforating cricoid perichondritis. With a probe the roughness of the projecting cartilage might, perhaps, have been recognized. At all events, in similar cases a metallic probe should be introduced into the beginning of the œsophagus with a view of touching the denuded, necrotic, rough cartilage, and thus to make the diagnosis.

Case 2.—Michael Dop, æt. 58, laboring man, after a thorough wetting in Dec., 1878, suffered from shivering, malaise, languor, restless sleep and great thirst. In the beginning of January of last year, lancinating and tearing pains in the middle of the thoracic spine came on, in addition, disappearing while he was lying quietly in bed, but increasing while being up, especially when he turned or stooped. During February the pains became worse and radiated to the occiput and right shoulder. Afterward he

* Compare: Charcot, Clinical Lectures on Diseases of the nervous system, ii, p. 146.

began to feel weakness in the arms, and occasionally constriction at the level of the axilla. For weeks at a time he had to stay in bed on account of the pain in his back ; between such rests he would go about and do light work. He entered the hospital July 21, 1879.

There was slight cyphosis below the fifth dorsal vertebra, cervical portion of vertebral column abnormally concave : both cervical and dorsal spine sensitive to pressure and percussion over great extent, especially below the fifth dorsal vertebra. Patient unable even in bed to sit up ; if helped to the position, the cyphotic place pains. Very cautious, grasp with hands weak, rotation of head limited. During the first few days in bed he was free from pain ; afterward tearing pains came on in paroxysms in the spine, loins, thighs and feet, by the end of August also in the shoulders, the sides of the thorax and along the back to the occiput. In the middle of September he fractured the sixth and and seventh ribs by a fall against the edge of the bed. Exudative pleuritis ensued, which was cured. On October 7th, difficulty of swallowing commenced. The mucous membrane of the posterior laryngeal wall was seen to be œdematous and could be felt with the finger as a soft cushion. Two days later the patient was unable to take solid food, nor any except very small quantities of liquid. His voice became hoarse, breathing labored. The posterior pharyngeal wall immediately above the larynx was now found swollen, about like half a walnut in extent. This concealed from view the posterior portion of the larynx ; the whole interior at the front, including the vocal bands, red. The entire larynx appeared to be pushed forward and to the right. The pharyngeal catheter was introduced without difficulty. On the 15th, the uvula also became œdematous, the voice completely aphonic, and breathing more and more difficult. He died on the 16th.

Autopsy showed several portions of the skull, the whole of the vertebral bodies, and the long bones and ribs at many points dark red, soft and spongy in texture—osteomalacia. In the region of the fifth cervical vertebra, there was a loss of tissue of the thickened pharyngeal wall, oval in form, about 1.7 *cm.* long and almost as broad ; for about 1 *cm.* around this the wall showed a grayish-green discoloration ; above, the mucous membrane was pale yellowish and very œdmatous. Opposite, the pharyngeal face of the wall of the larynx was discolored, and the upper edge of the cricoid plate protruded, smooth and clean, to the extent of about

1 *cm.*, with a deep sinus behind. Intense œdema of the upper aperture of the larynx, of the ventricular folds, vocal bands, and the mucous membrane of the posterior laryngeal wall.

These two cases show how disease of the vertebræ with forward curvature of the cervical spine can cause cricoid perichondritis. As further proof, there may be added one of the cases mentioned by Dittrich in his essay on perichondritis in which he could trace no connection with any other disease. Cricoid perichondritis was found in a woman seventy years old, whom gout had made bedridden for two years, in whom the articular extremities of the bones were filled with a dark-red marrow and were easily cut, and in whom the subcutaneous areolar tissue around the knee and the periosteum at the anterior portion of the cervical vertebræ showed tumors about the size of a hazel nut, which contained a dry calcareous substance.

CYSTS OF THE VOCAL BANDS.

By Dr. O. HEINZE,

LEIPZIG.

(Translated.)

IN the first number for this year of the *Breslauer ärztliche Zeitschrift*, SOMMERBRODT has published the report of four cases in which cystic tumors were found on the free edge of the vocal bands, three of which he operated upon, and of five other cases in which, "most probably," such cysts existed. Based on his observations, he describes these cases as constituting a typical affection, for the diagnosis of which the following signs suffice, viz., nodular or spindle-shaped thickening of the edge of the vocal band, of the same white tendinous color as that of the normal band. The depression that can easily be produced in the swelling by touching it with the point of a probe, and which serves for the purpose of differential diagnosis between cyst and fibroma. To supplement, and in some respects, to modify this symptomatology I place the following case on record:

A physician, a country practitioner, 40 years old, consulted me Sept. 2, 1874. Having repeatedly suffered since the year 1857 from attacks of laryngeal catarrh of varying intensity and duration, he had latterly observed that they sometimes passed off either suddenly or in a remarkably short time, so that the much veiled, hoarse voice at once became deep and almost quite clear. This improvement, however, never lasted; soon the voice again became veiled, although each time a longer period would elapse before extreme hoarseness reappeared.

On examination I found, on the free edge of the left vocal

band, at the junction of its anterior and middle thirds, a spindle-shaped tumor, about 1 cm. long, and at its middle ½ cm. broad, grey-whitish, looking like the vocal bands, and slightly bluish at its middle, smooth and shining. There is immobility of the tumor during in- and expiration; during phonation its summit either touches or overlaps the right vocal band. The voice is monotonous, a harsh falsetto with occasional diplophonia. Subjective troubles of any other kind are wanting. Examination with the probe, which the very irritable patient learned to tolerate only exceedingly gradually, showed that a little depression would follow pressing upon the middle of the swelling, while the other portions, especially the basis attached to the edge of the vocal band, were of decidedly firmer consistence.

On one of the succeeding days, the sharp-pointed covered knife having been used several times, but without being unsheathed, for the purpose of blunting the sensibility of the parts; when the patient entered my office he spoke with a quite loud, deep and much less veiled voice. The mirror revealed a reduction of the tumor to almost one-third its former size; the whole of it was somewhat reddened, with a distinct falling in of the edge looking toward the opposite vocal band. The touching had evidently led to spontaneous rupture of the cyst. The rest of the tumor, which felt quite firm under the probe, disappeared after repeated discisions, and, in a short time, the patient was dismissed with a normal vocal band and clear voice.

This was a case of cyst of the vocal band with decidedly firmer walls than existed in the cases of Sommerbrodt; in all of his, the whole tumor disappeared immediately after incision and emptying of the contents, and such occurrences must be remembered in making the prognosis as to the quickness and easiness of the operation. I am enabled to deduce the following as an additional, and, whenever present, characteristic symptom of cyst of the vocal band, viz., that the voice, affected by the tumor, suddenly or very rapidly improves, an account of the spontaneous rupture of the cyst, emptying of the contents and shrinking of the sac, as certainly happened repeatedly to my patient, causing the remarkably sudden or quick clearing of his voice.

The assertion of Sommerbrodt (*l. c.*) that he alone had

observed and (in 1872) published cases of cysts of the vocal bands, is incorrect; such cysts have been observed, recognized as such, and operated for, before Sommerbrodt's time, viz., by Gibb, in 1863, on the right vocal band; by Merkel, in 1866, on the left vocal band; by Fauvel, in 1869, on the left vocal band, in the anterior commissure. In 1873, Fauvel operated for a cyst attached to the right vocal band near its free edge, in a child 14 years old. And up to the year 1871, when the first of Sommerbrodt's observations was made, Tobold had already observed nine cases and operated on five.

As to the frequency of this occurrence, cysts of the vocal bands do not seem to be so very rare. Tobold has reported in 206 cases of "polyp" occurring between 1861 and 1874, 21 cases, of which 9 were operated; Fauvel, in 300 cases, between the years 1862 and 1875, 2, both operated; Mackenzie, in 189 cases of operations for laryngeal tumors by others, between 1862 and 1870, 2 (the cases of Gibb and Merkel), although of his own 100 cases none were cysts. The *operated* cases, therefor, amount to *at least* 17 (Tobold 9, Sommerbrodt 3, Fauvel 2, Gibb, Merkel and I, each 1), the observed cases to very many more.

RESEARCHES IN THE MINUTE ANATOMY OF THE LARYNX, NORMAL AND PATHOLOGICAL.

By CARL SEILER, M.D.

PHILADELPHIA.

I.

METHODS OF INVESTIGATION.

MICROSCOPICAL examination of the tissues composing the larynx is not only more difficult than similar examination of any other organ, but even a correct interpretation of what is disclosed under the microscope is impossible unless the continuity of the parts is sufficiently well preserved, so that a gland, for example, may be traced to the end of its duct and a muscular fibre to its insertion.

I shall therefore premise the account of my investigations into the minute anatomy of the larynx by describing the methods employed in preparing the specimens for microscopical examination.

I.—*Hardening and cutting the sections.*

The specimen of larynx should be placed as fresh as possible into a solution of ¼ per cent. of chromic acid in 45 per cent. of alcohol, and this solution should be renewed every two days. After 12 or 14 days, pure 95 per cent. alcohol should be used to finish the hardening, and should be renewed frequently until it remains unstained by the chromic acid remaining in the tissue.

This method of hardening I have found to be better adapted to the work in hand than either the chromic acid

alone or the alcohol hardening alone, a fact accounted for by the great diversity of tissues which enter into the composition of the larynx.

When chromic acid alone is used the sections cannot be stained satisfactorily, and the different parts are apt to be of unequal degree of hardness, so that it becomes difficult to make a satisfactory section. On the other hand, the hardening with alcohol alone is unsatisfactory, because it will not penetrate into the interior of the tissue when thick pieces are immersed in it: for instance, when an entire larynx is to be hardened as a whole. The combination of the two agents, however, not only overcomes the individual difficulties, but presents a great additional advantage in the fact that the chromic acid will remove the earthy salts from ossified cartilage, especially when a small percentage of nitric acid be added, so that the larynx of adult subjects may be used without difficulty.

As a test whether the organ has been sufficiently hardened, I press it between the thumb and forefinger; when it feels solid it is ready for cutting, but if it feels springy and elastic it must be still further hardened.

I also thrust a fine sewing needle, mounted in a wooden handle, through it to determine whether the ossified portions of the cartilage have been softened.

II.—*Cutting the sections.*

When sufficiently hardened the organ is ready for cutting; and I would here make a few remarks on section cutting in general, before describing the particular method I have used in making sections of the larynx.

The great desideratum in sections of animal tissues, both normal and pathological, is extreme thinness, evenness, and sufficient size to bring into view the different parts of which it is composed. This last point has as yet not received sufficient attention from microscopists, and especially from those engaged in pathological histology, and yet it is of the greatest importance, for very frequently a pathological new growth, or, as in the case of the larynx, a normal tissue,

will present different appearances in different parts, and an erroneous conclusion is often entertained in regard to its nature from the fact that a small section only has actually been subjected to examination.

The usual method of cutting sections is by imbedding a small piece of the tissue in paraffine or wax and oil, and cutting thin slices by means of a razor after the imbedding material has become hard. In this way very thin sections may be made it is true, but they are usually uneven in thickness and but small in size. Larger and better sections can be made in a microtome, which consists of a well surrounded by a glass ring and fitted with a sliding bottom, which may be shoved up and down by means of a micrometer screw. If this instrument is to be used, the well is filled with appropriate imbedding materials—the best of which I have found to consist of one part of mutton-tallow to two parts of paraffine—the hardened tissue is suspended in it and it is allowed to cool. When cold and stiff the imbedding material is cut from the tissue downward in front and on either side, but is left standing behind. This is done to cause the razor or section knife to pass through the tissue only, and not through the imbedding material before it reaches the tissue. If this precaution is not observed, it will be found to be almost impossible to cut large even sections because of the difference between the degrees of hardness of the imbedding material and of the tissue to be cut, and because particles of the paraffine and tallow mixture adhering to the knife are apt to tear a thin section before it is completely cut off.

An ordinary razor, one side of which is ground flat, or a knife made with a stiff handle expressly for cutting thin sections should be used in connection with the microtome, and should be kept as sharp as a strop can make it.

It will be found that the edge of the knife has a bevel, produced by honing and stropping, which will raise the cutting edge above the glass plate, if the flat side of the knife be laid on the plate and will cause the knife to cut upward and out of the tissue, thus breaking the section before it is completed. If the operator is conscious of this upward ten-

dency and tries to correct it, then alternate strips of thick and thin portions will be observed in the sections. This difficulty can be abviated by raising the back of the knife slightly so as to cause it to slide on the level. It will also be found that it is much easier to cut a large, thin section with a knife the edge of which is perfectly straight, than with one that has a curved edge, as is always the case with razors. This is because the slightest variation in the inclination of the knife toward the glass plate will cause the curved edge to gauge into the tissue as it passes through it, and the result will be either a wedge-shaped section or a wavy one. It is evident, therefore, that the knife should be carried through the tissue with an even motion, and be kept at the same inclination in order to insure success. This is, however, not as easy as might be imagined, because the hands are not usually sufficiently steady without a great deal of practice. It occurred to me some time ago that if the knife could be rigidly fastened to a mechanical apparatus by means of which it could be moved over the well of the section cutter in the same manner as the hands move it sections of any size and thinness could easily be made, even by an unpracticed hand.

Such an apparatus, called a mechanical microtome, has been constructed by myself, and used with great satisfaction for ordinary sections. I soon found that in order to succeed in making thin sections of the larynx, it would be necessary to surround the well of the microtome with a trough filled with a liquid, so that the sections could be floated off as soon as cut, thus avoiding the handling with forceps, and the consequent danger of breaking the sections.

The apparatus which I now use, with the best possible results, and of which the accompanying cut gives a very good idea, consists of a cast-iron trough, 18 inches long by 6 inches wide, and 1½ inches deep, in the centre of which the microtome well, with its glass ring, is fastened. From the back rim of the trough extend two arms of brass, 6 inches long and about one inch wide, having a slit cut into them parallel with their edges. Two pivots are secured in

these slits by means of thumbscrews, and these pivots carry two long arms bent in the shape of a Z. These latter arms are also provided on their longer extremity with slits in which again the pivots are fastened by means of thumb-screws. This arrangement allows of a changing of the centre of revolution of the longer arms, without necessitating a change in their length. The shorter extremeties, which slip into the trough, carry on their ends a rotating post, to which a swinging clamp is attached. When this apparatus is to be used, the trough is filled with alcohol until the glass plate of the microtome is immersed in it to a depth of about ¼ inch; the knife, detached from its handle, is then firmly secured in the clamps by means of thumb-screws, and is moved across the opening of the well. It will be seen that this motion of the knife is a compound one, viz., forward and sideways, the same as is executed by the arms of the operator in cutting sections without mechanical means, and this motion is necessary in order that the knife should cut well and smoothly.

The sections float in the alcohol as soon as made, thereby diminishing the risk of breaking by adhesions to the knife durng the act of cutting, and they can be lifted out on a glass slip or piece of stiff paper for further manipulation.

When transverse sections across the whole larynx are desired, the hyoid bone should be carefully dissected off and the trachea separated from the larynx by a transverse cut through the interval between the cricoid cartilage and the first ring of the trachea. The organ may then be embedded in the microtome in an upright position, and sections may be made, commencing at the top of the epiglottis. In this way each section as it is made may be floated on either glass or white paper, and marked as to its position in the organ. For example, a section of the middle of the epiglottis would be marked thus on the paper or glass upon which it has been floated: "epiglottis, first section of middle," and the paper with the section may then be carried through the process of staining and mounting, thus marking the section so that it can be distinguished from all others.

III. —*Staining.*

After the sections are cut they may be mounted on glass slips, and covered with their cover glass for examination under the microscopic; but it will be found that very little can be seen in this way, and it becomes necessary to differentiate the histological elements by staining, which can be done by a great number of processes, descriptions of which are to be found in every work on microscopical technology.

In my investigations on the histology of the larynx, I have made use of two processes which gave better results than all others, and I shall therefore give a short description of them:

They are first a simple carmine staining, and second a double staining with carmine and indigo. The carmine solution I use is one the formula for which was first published several years ago by Dr. J. J. Woodward in the *Lense*, and is as follows:

Take of best carmine, No. 40, gr. 15.

Borax, ʒ j.

Water. ♏ ℥ vss.

Alcohol, 95 per cent., ♏ ℥ xj.

Mix and filter. Then dissolve the filter, together with the crystals remaining in it, in 8 ounces of distilled water, and evaporate over a water bath to 4 ounces.

Sections placed in this fluid will stain very evenly in a few seconds, and appear of a violet red when removed. They are then immersed in a solution of muriatic acid 1 part and alcohol 4 parts, until they assume a bright red color, which change occupies but a few seconds. The sections are then to be washed in several changes of alcohol, and after that they are ready for mounting.

A section thus treated exhibits the nuclei with their granules stained only, while the cell contents, its wall, if such be present, and fibrous tissue are not tinted. This is of great advantage in many cases, as a much clearer picture results than if the coloring matter is seen also in non-nucleated structures, and the nuclei are marked only by a deeper staining. If, however, for purposes of diagnosis, it is desirable

to stain the cell contents also, this can be accomplished by using a saturated solution of oxalic acid in alcohol, or by employing but a few drops of muriatic acid in the ounce of alcohol, and by leaving the stained sections a little longer in these weak acid solutions.

The same may be accomplished, but in a much more beautiful and satisfactory way, by double staining with carmine and indigo in the following manner:

The section is first stained with carmine by the method described above, but care should be taken to wash all traces of acid out of the tissue; it is then immersed in a solution of 3 drops of sulph. indigotate of soda in 1 ounce of 45 per cent. alcohol, which solution should be filtered before using, and is left to stain from 6 to 18 hours, according to the rapidity with which the elements take up the indigo. When sufficiently stained, the sections are placed in strong alcohol and are ready for mounting.

The indigo solution is prepared according to the process devised by Mr. Bullock, of Philadelphia, by first digesting best Bengal indigo with Nordhausen sulphuric acid. The excess of acid is then removed by washing, and the coloring matter precipitated with chloride of sodium and left standing for several days. The precipitate is then separated from the mother liquor by filtering through flannel, and the excess of chloride of sodium washed out by pouring cold water through the filter until the coloring matter begins to dissolve. The washing is then suspended, and the precipitated indigotate of soda is dissolved in warm distilled water to saturation.

The effect of this mode of staining is to leave the nuclei bright red, while the cell contents are slightly tinged with blue. The connective tissue fibres are of a deep blue, while the blood-vessels are purplish and are mapped out better than they are in an injected preparation which has been stained. The effect upon epithelium and hair is very curious, inasmuch as the different ages of cells take different colors, ranging from a brilliant emerald green to purple and violet, thus affording a valuable means of differentiation, especially in epithelioma, where the so-called "perles" are

brought out with great distinctness, being of a different color from the rest of the cells;

I have also used nitrate of silver, chloride of gold, osmic acid, and a variety of other agents for staining, which will be indicated in connection with the description of the histological details brought out by them.

IV.—*Mounting.*

After the sections are stained, they must be mounted on glass in a medium, which will render them transparent, and at the same time preserve them so that when they are covered with thin cover glass, they may always be ready for examination. Such mounting media are canada balsam and glycerine.

The latter, although preferred by many eminent microscopists, I have found to be unsatisfactory for permanent mounting; but it may with very great advantage be used for sections which are to be examined immediately, and I am in the habit of mounting two contiguous sections, one in glycerine and the other in balsam, because the former will often bring into view details which remain invisible in a newly mounted balsam preparation. In a balsam preparation, however, which is old, all these details become visible with greater distinctness than they are seen in glycerine, because the index of refraction of the balsam changes as it becomes solid. In old glycerine mountings, on the other hand, the elements become granular, so that what was at first seen with distinctness, soon became obscured by this course.

On account of the great diversity of tissues entering into the constitution of the larynx, I found it necessary to deviate somewhat from the usual method of mounting in balsam, and especially to dispense with oil of cloves or benzole as a clearing agent. I find that the best preparations may be made by first dehydrating the section thoroughly in absolute alcohol, and then after it has been laid out on the slide, covering it with an alcoholic solution of canada balsam, and allowing it to lie protected from dust

until the specimen is clear, when it should be covered with the cover glass.

This solution of canada balsam is prepared by first evaporating a clear sample of balsam to dryness over a water bath, and then dissolving it with hot absolute alcohol until a solution the thickness of thin syrup is obtained. The specimens thus obtained are admirably suited for study, and drawings as well as photographs can be made from them with the solar microscope, illustrating certain points. This latter process of obtaining illustrations is more satisfactory than mere drawings, which necessarily must always be tinged by the imagination of the draughtsman. But diagramatical drawings are often indispensable to give a clear idea of the intricate structural details, and therefore photomicrographs and drawings made with the camera lucida will both be used in illustrating my own remarks on the histology of the larynx.

EXTIRPATION OF THE LARYNX AND ANTERIOR WALL OF THE ŒSOPHAGUS.—RECOVERY.

By FRIEDRICH LANGE, M.D.

NEW YORK.

MR. A., of St. Louis, æt. 74, had always been a strong and vigorous man, and cannot remember having had any serious disease, especially venereal trouble. Some two years ago he complained of attacks of periodical hoarseness, which some months later, were associated with a frequent cough, caused by particles of food passing into the larynx during deglutition. In October, 1878, he consulted Dr. Glasgow of St. Louis, who at that time, as far as I may judge from a communication from him to Dr. Lefferts of this city, was able to discover a tumor apparently springing from the right ventricle, involving the whole of the right side of the larynx and pushing up the base of the epiglottis, dislocating it to the left. The right vocal cord with the anterior half of the left was not visible, the rima glottidis being marked alone by a narrow irregular shaped opening. The voice at that time seems to have been hoarse, but dyspnœa and dysphagia were wanting. Dr. G. not believing the case to be a favorable one for operation, decided to wait until the encroachment of the tumor should cause more severe symptoms. The patient went later to Chicago, where after several months "tracheotomy" was performed on account of increasing dyspnœa (about February of the same year). The galvano-cautery was applied at the same time apparently with some success, as far as regards some diminution of the growth. The patient returned to St. Louis

about May, when an examination by Dr. Glasgow showed that the tumor had now much increased in size, still further distorting the larynx, and that externally a bulging of the right wing of the thyroid cartilage was visible. The patient wearing a rubber tube of insufficient size, an enlargement of the existing tracheal opening was made by means of the knife and actual cautery, and a larger sized silver tube was introduced. Since July the growth had increased rapidly, not only downward into the trachea, but also toward the entrance of the larynx and outward as shown by the bulging of the thyroid cartilage. A decided difficulty in swallowing had existed for two months, and only fluid food could be taken. A portion of the tumor was again removed through the tracheal wound, but this only served to stimulate the growth of the remaining part. An examination of the removed portions showed the probable nature of the tumor to be fibro-sarcomatous.

Altogether during the last six months the patient has been in a state of constant suffering. He has lost strength and flesh rapidly, had continuous trouble through insufficient admission of air, coughing caused by frequent passage of food into the trachea during the act of swallowing, and hence chronic bronchitis, interrupted sleep, nervous irritation and insufficient nutrition, all seem to have equally contributed in reducing him. One of his physicians had been incautious enough to pronounce his disease a perfectly hopeless one. He himself noticed its rapid progress and decided to rid himself of suffering by any possible means, even at a risk to his life.

I saw the patient about October 5, 1879, in consultation with Dr. Lefferts, and found him in the following condition. A tall man, emaciated to a considerable degree, slightly feverish and exhausted by his journey from St. Louis to New York. There existed an abundant secretion of purulent mucus in the larger bronchi, which very often caused fits of dyspnœa, severe coughing and even suffocative attacks through blocking of the canula. This canula, even when free, was not large enough to supply the air necessary for an adult man.

(On account of its nearly rectangular shape—an inner tube was impossible, and in order to clean it it was necessary each time to remove it, a troublesome and difficult operation.)

The patient swallowed even fluids with difficulty, in small quantities and only by repeated effort. A part of the food regularly passing into the trachea, causing severe fits of coughing. Notwithstanding this fact the patient had never acquired a foreign body pneumonia, (*Schluck-pneumonia*). The larynx seemed increased in size and protuberant. Between the location of the canula and the hyoid bone, a hard somewhat elastic tumor could be felt about the size of a medium orange, apparently involving the larynx and most prominent on its right side, especially immediately below the hyoid bone, passing underneath the right sterno-cleido muscle and dislocating the large vessels toward the right, so that the pulsations of the carotid could be felt most distinctly behind the sterno-cleido muscle as in cases of stroma. The tumor was movable and was slightly raised during swallowing. After the removal of the canula, a grayish, mulberry like mass presented itself protruding from above, similar in aspect to pale granulations, but of a moderately hard consistency. It was difficult to precisely locate the point where the tracheotomy had been performed. The opening was a short distance above the *jugulum.* In consequence of the several operations the tissues were hardened, rendering palpation unreliable. Finally I came to the conclusion, that the point of the supposed tracheotomy was at the crico-thyroid space and the upper edge of the cricoid cartilage. A surgeon of St. Louis believed that tracheotomy had been performed below the cricoid cartilage, and it will be shown how far we were both mistaken. The cavity of the larynx was not yet entirely obstructed. In closing the external opening the patient was able to take a few inspirations, and even to speak with a soundless constrained voice, but with so much trouble that usually he preferred to communicate in writing. The laryngoscopic examination and palpation through the mouth essentially confirmed the above-mentioned conditions, and showed the unexpected still larger volume of the tumor.

The size and location of the neoplasm easily explained the inefficient closure of the *introitus laryngis*, it everting the epiglottis and preventing the *radix linguæ* from being turned down into its physiological position during deglutition. The surface of the tumor seemed to be covered by mucous membrane, though abnormally red, ulceration was nowhere visible. No enlarged nor infiltrated glands except one, a small one in the right sub-maxillary region, which probably had no relation to the tumor were to be found. The external skin was normal and freely movable. To inform myself as to the nature of the tumor, I punctured it by means of an *akidopeirastic* instrument, penetrating through hard resistent masses which gave a grinding feeling to the finger, sometimes alternating with regions of less consistency. The microscopical examination of a small piece from the principal mass as well as from that, which appeared at the opening for the canula, showed fibrous and elastic tissue in abundance through which round and a few spindle cells were scattered. In addition, the piece taken from the mass above the existing external aperture, showed a great many pavement cells but of such regular arrange ment, that I was lead to assume it to be a portion of the normal covering of the mucous membrane belonging to the vocal cords. Atheroma of the arteries existed and a very irregular action of the heart, but except a catarrhal affection of the bronchi, no other marked condition could be detected by Dr. Conrad, who examined the patient very carefully. There was a tuberous resistent swelling of the left epidydimis, which according to the house physician, Dr. Hausmann of St. Louis, who had accompanied the patient, had persisted for several months beginning with subacute symptoms of inflammation and a fluid exudation into the tunica vaginalis, the latter disappearing later. I left the question in suspense, whether this might not be a metastatic tumor, even if the benign nature of the laryngeal tumor was conceded. To ascertain how far the mouth of the œsophagus was obstructed, I introduced a medium sized œsophageal tube without difficulty, a fact which together with the one that the main growth of the tumor, was from the anterior

parts of the larynx, lead me to the conclusion that the obstruction might be caused alone by the compression exerted by the tumor, and that the walls of the tube were probably free.

The patient strenuously demanded relief from his sufferings, he had always enjoyed life, and his present mode of existence made it an insufferable burden. Two indications were to be met in a successful treatment of the case, to increase the supply of oxygen and to render deglutition possible.

The first indication could be fulfilled without great difficulty or risk to life, by enlarging the existing opening and introducing a canula of sufficient size. Probably the continued growth of the tumor would interfere with this very soon, but then the opening could be made lower down, and for a number of weeks, perhaps even months, a sufficient supply of air could be furnished. Of course in this case, the idea of restoring the voice would have to be given up. Regarding the troublesome passage of food into the trachea, there was the hope that it might cease, when the neoplasm caused entire obstruction of the larynx, probably in a very short time. The second indication involved the restoration of free deglutition. There was ample evidence that swallowing was becoming rapidly worse, and that feeding by an œsophageal tube would soon become impossible, a proceeding likewise to which the patient strongly objected; altogether the danger to life by starvation seemed to me the most imminent. To open the alimentary canal beyond the constricted point was regarded as complicated by so much danger, that the question naturally arose, whether it might not be possible to fulfill both mentioned indications in a more complete manner, a severe and dangerous operation being in any event necessary. Here the extirpation of the larynx alone could come into consideration, If successful, the operation would restore free breathing and probably unobstructed deglutition, (there existing no direct signs of the walls of the œsophagus being implicated), likewise the restoration of the voice could be hoped for by means of an artificial vocal apparatus.

A study of the recorded instances where the operation has been performed, shows us that two processes have to be regarded as apt to endanger life after it, pneumonia and septicæmia. Pneumonia, a *foreign-body pneumonia*, might be prevented by keeping the secretions from the trachea. This has been done by several surgeons in an efficient manner by means of Trendelenburg's Tampon-canula. In others, this apparatus did not fulfill the indication, and in still others it caused too much trouble to the patient. My own experiences have taught me that it is not entirely safe, for, as far as its workmanship is concerned, we are dependent upon the instrument-maker, and I have several times assisted at operations, where, in spite of every possible precaution, the tampon did not entirely close the trachea or it burst when blown up. I therefore endeavored to find another and better material (not being in favor of Foulis' lead pipe with a rubber ring on account of its heaviness and hardness), and discovered it in common tinder. If we wind several folds of tinder around a canula and place it in a test tube of suitable size, even loosely, and then direct a stream of water upon the back of the canula, hardly a drop of the fluid runs into the glass. Sponge, even tightly impacted, allows the water to run down freely. Moreover, good thick tinder is soft, smooth, and consequently does not irritate as much as common sponge. The tinder is cut in such a shape that the canula is thickened to an elliptic form. To prevent it from slipping down too far, a little above the tinder cover, a prominent ring of tinder is fastened, which rests upon the edges of the tracheal wound. The patient has worn this tube for six weeks without trouble, frequent change of the tinder is, however, necessary, on account of the fœtor; a second tube may be held ready, in reserve.

The decomposition of the secretions, which seems to have been the cause of death in some reported cases, may be due to the bathing of the wound by the fluids from the mouth during the earlier days after the operation. A loose and sensitive connective tissue was likewise exposed to this same cause of irritation, much necrotic tissue sloughed

away, and the free use of antiseptic fluids did not control the fœtor of the discharge until the wound had granulated. I proposed avoiding this complication in the following manner: Assuming the œsophagus to be intact, I thought it possible to close the wound in the neck from the cavity in the mouth by attaching the anterior wall of the œsophagus to the lateral flaps of the external skin, which were to be formed according to Langenbeck's method. By this measure, perhaps primary union of a great part of the external wound could be obtained, this being a decided advantage in our case, where a large wound was of necessity expected, and where a prolonged suppuration in a man of 74 years of age and of a weakened constitution was apt to materially increase the danger. Finally there was no doubt that, taking into consideration the age of the patient, the irregular action of his heart, and the size of the tumor, that the immediate danger of the operation in our case was greater than in any other heretofore reported.

I had no direct proof that we had to deal with carcinoma. On the contrary, the non-ulcerative character in spite of the size of the tumor, the absence of infiltration of the lymphatic glands and the result of the microscopical examination, seemed to prove the contrary, and that it was probably a fibro-sarcoma, a point bearing directly upon prognosis. I therefore, with the concurrence of Dr. Lefferts, laid the whole matter before the patient, who had already informed himself well—concerning all matters and facts relating to the operation, and awaited his decision; this was most strongly in favor of an immediate resource to it, and believing as I did, that it alone offered a chance for prolonging his life, and that to this chance he was entitled. I proceeded on October 12th, with able assistance, to operate as follows:

The patient, under the influence of chloroform inhaled through the canula, was brought into Rose's modified position, as recommended by Haas, and an incision made from the hyoid bone down to the canula, and from the upper edge of this incision two cross-cuts toward the border

of the sterno-cleido-mastoid muscles. The flaps thus formed were loosened to below the superficial fascia, then the canula was removed and the incision prolonged below it to the *manubr. sterni*, the existing opening was enlarged by cutting out the cicatricial tissue and by biting out the cartilage by means of Hoffmann's bone-scissors, and the canula with tinder-tampon was then introduced. In consequence of the vertebral column being in a state of senile stiffness and curvature, the position with lowered head did not prevent some blood from being aspirated, though the pelvis was raised as much as possible. The upper part of the canula broke while attempting to introduce it, and in future cases I would advise against the use of a rubber canula and in favor of the lead pipe or Foulis' tube, but surrounded by tinder.

The external muscles of the larynx and hyoid bone were grown together with the tumor and their upper part looked rather suspicious. They were all detached, together with the growth. All visible vessels were tied before cutting them, and so the thyroid arteries and veins were secured without loss of blood; about forty ligatures were applied. After the front and lateral part of the tumor had been laid bare, the main difficulty lay in detaching the larynx from the hyoid bone and from the sheath of the great vessels on the right side, with which it was intimately connected. The tumor had grown upward behind the hyoid bone toward the *radix linguæ*, and I finally removed its right horn because the tumor had become attached to it. The larynx was now separated from the large vessels without trouble, and then by means of a strong hook-forceps pulled forward and separated from the œsophagus, finally being cut from from the air tube about half an inch below the opening for the canula.

It now became clear that the operation formerly performed and supposed to be tracheotomy had been a thyrotomy. On removal of the larynx it was seen that at several points the anterior wall of the œsophagus was involved in the tumor, so that I was obliged to remove a great part of it by a cuneiform excision. Of course my plan regarding

the after-treatment was overthrown by this circumstance. The lumen of the tube was reëstablished by uniting the cut borders with catgut suture, but its attachment to the external flaps was of necessity given up. On account of undue tension two long drainage tubes were placed along the large vessels, and a horseshoe-like catgut drain around the trachea, and all ends brought outward upon the *manubrium sterni*. The borders of the longitudinal incision were then united by three sutures, after the trachea had been attached to the skin in a space which had been formed by small cross incisions in the skin immediately above the *jugulum*, because of its tendency to sink downward behind the sternum. A soft dressing of salicylic cotton pressed the integument against the anterior wall of the œsophagus. By those means I hoped to achieve an adhesion of the parts and realize as much as was possible of my original plan.

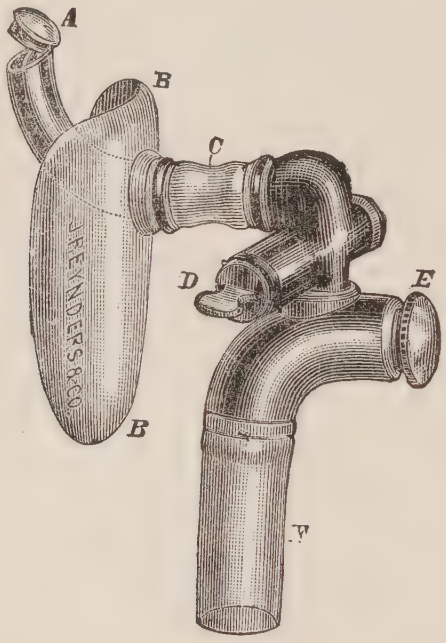
But my calculations were disappointed by the impossibility of preventing the abundant secretion of mucus and saliva from running down between the flaps, especially after feeding, and which was too thick to pass into the œsophagus by the permanent rubber tube, which I had introduced into it. The wound was frequently washed with thymol, but it became covered by a smeery mass. The second day I removed the sutures and allowed the flaps to separate again, the loose connective tissue became necrotic, the united border of the œsophagus sloughed, and the defect in the œsophagus became still larger. The uppermost corner of the flaps remained united.

The general condition of the patient was good until the fifth day. He had but moderate fever, complained only of thirst, but in the morning was always in a state of apathy and partial collapse. In swallowing, of course everything ran out in front, and the patient was fed (and that from the second day) by means of a Petaton-Catheter with beef tea, eggs, milk punch, sherry, champagne, etc. On the evening of the sixth day his temperature rose to 102°, and he had a troublesome night, was delirous, and the following morning was so reduced that I gave him up. There was weak-

ness of the heart without doubt, the pulse being from 48 to 54, irregular and weak, but his condition was more probably caused by blood poisoning, the wound being to a large extent necrotic, and a phlegmonous infiltration extending along the left sterno-cleido muscle in spite of oft-repeated disinfections. After consultation with Dr. Conrad and Dr. Hausmann, whose continuous and able services were of the greatest value during the after-treatment, it was decided to stimulate as much as possible. There had not been enough attention paid to the cleansing and disinfection of the mouth, and I think that from that point putrid matters were conducted upon the wound, causing decomposition. In a future case I would not omit a thorough disinfection of the *cavum oris* as has been recommended by Billroth, before the extirpation of the tongue. It was not until the end of the second week, and much necrotic connective tissue had sloughed away, especially from along the vessels, that the offensive smell ceased, and there is no doubt that the patient would have succumbed to septicæmia, had not the drainage been most careful. The general treatment during the whole second and third weeks was directed to keeping up the patient by excitants. Camphor, ether, wine and brandy were freely administered. The whole treatment was tedious and difficult, the patient in a state of great weakness and marked mental depression.

Day and night inhalations were kept up by means of a steam spray, first with thymol, later on with benzoate of soda, finally with pure water. This favored very much the expectoration of the sticky bronchial mucus. In the interval moistened sponges with carbolic acid solution were kept before the canula. According to Foulis, the fluid which gathered in the *jugulum* around the canula was frequently sucked out by a syringe. It was not until the end of the fourth week that the extreme weakness and tendency to collapse ceased—the wound then being in good condition. The drainage tubes were removed during the third week, and in the fifth, cicatrization was so far advanced as to allow of the application of our apparatus, which replaced the anterior wall of the œsophagus, and of an artificial larynx. I

soon found out that the patient was able to swallow fluids with the aid of a trough-shaped plate, the lower end of which reached into the œsophagus, and which was drawn slightly forward, during deglution, by means of two threads fastened to it. This procedure was found necessary, in order that the plate be kept away from thc posterior œsophageal wall, thus enlarging the tube, and that the tissues lying in front of it, when in place, should be in close opposition to it. On its anterior surface was a slight concavity corresponding to the convexity of the trachea, whilst the lateral parts allowed of a free passage and corresponding to the anatomical position of the œsophagus, the left half was shaped so as to form a larger canal. In



order to apply this plate, the small bridge of skin in front of the neck had to be separated. The ridge formed by the posterior wall of the œsophagus was now lined by two thick pads of soft tissue, and the large vessels, by cicatrization, had been drawn immediately to the lateral sides of the œsophagus. There existed an ectropium of the remainder of the anterior wall, which favored the mucus in running toward the tracheal opening. In the act of swallowing the œsophagus is raised about half an inch and the plate is pressed more tightly toward the hyoid bone, and it is plainly seen how far back the *Basis linguæ* falls during the act.

At the end of the sixth week cicatrization was complete except at the spot where the hyoid bone had been cut through and a small sequestrum had exfolicated. The granulations here had a luxuriant character, they had been cauterized several times with chloride of zinc, but still there was no apparent tendency to heal. I therefore, just six weeks after the first operation, removed the whole body of the hyoid bone, and at this date cicatrization is complete Several trials have been made with our artificial larynx, but its application is not easy in consequence of its being difficult to attach it to the œsophagal plate. The fact was, however, made evident that it assisted the patient both in speaking and whispering. The apparatus varies in several respects from those heretofore used; but my experiments are not yet completed and I hope to make still further improvements.

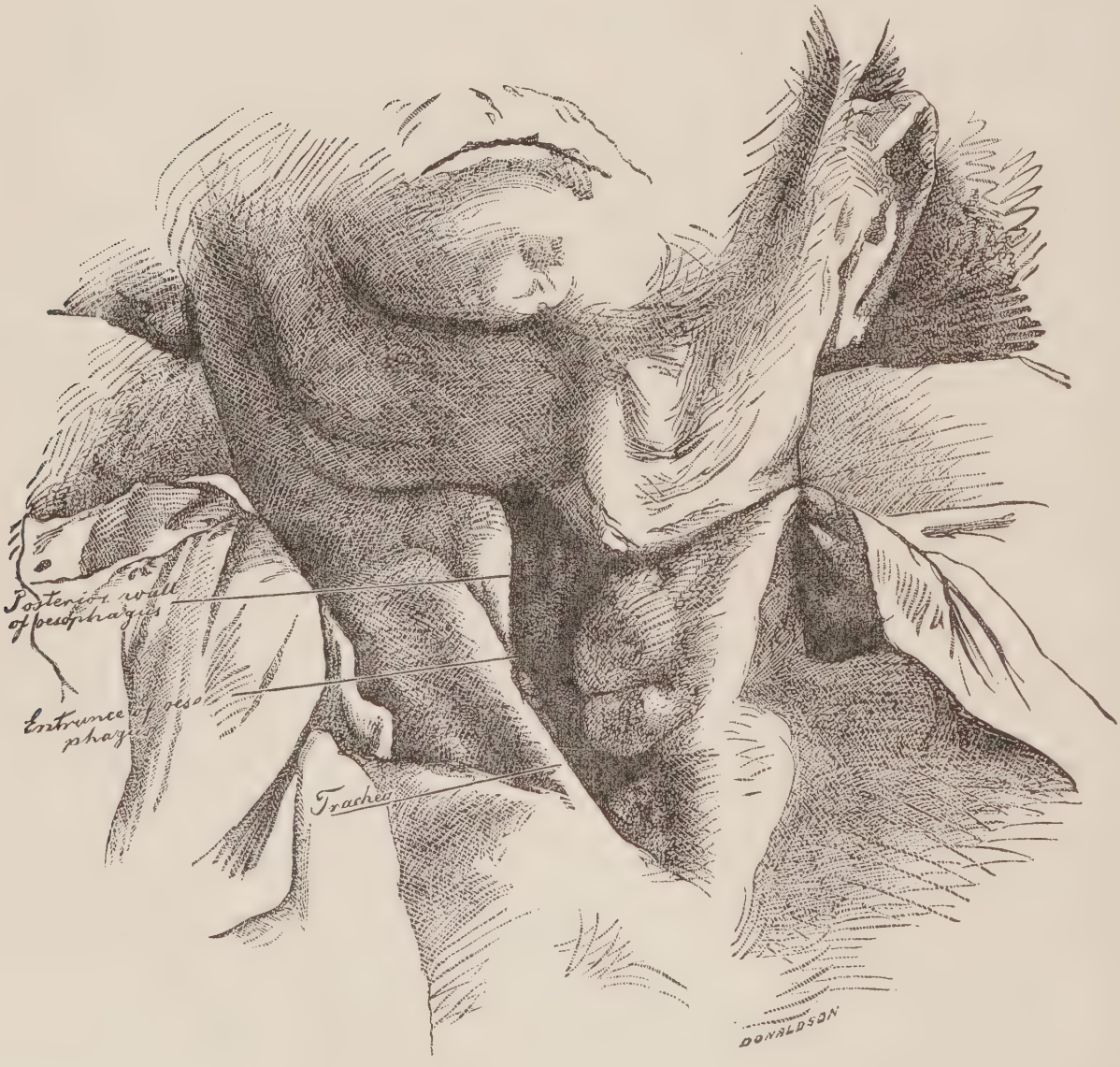
In order to avoid the dangers and complications which arise from the removal of a part of the œsophagus, I propose to make a flap having its base near the hyoid bone, and the inferior border of which is to be united to the anterior wall of the œsophagus. In this way the cavity of the pharynx may be closed; a secondary but slight operation would be necessary in order to establish an opening for the canula. A permanent rubber tube must be introduced through one of the upper angles for feeding, for the first few times after the operation.

SUPPLEMENT.

Three months after the operation the patient's recovery was so far advanced that he was able to return to St. Louis. His general condition had improved very slowly, though he was fed with the most nourishing food. Pancreatic enemata, after Leube's prescription, were given finally twice a day for about five or six weeks. They seemed to have a good effect upon the strength. The appetite also was increased, and the bowels became regular though habitual constipation had existed for years and the patient was accustomed to cathartics. Internally small doses of iron and later on of iodide of potassium were administered. The latter I have found to have good effect upon digestion in several cases. Mental

power was gradually restored, shortness of memory, apathy and fits of excitement disappearing with the improvement in the general condition.

When he left New York, there still existed a small fistulous opening leading toward the ring of the cricoid cartilage anteriorly and another one on its right side. They were, however, discharging but little, and caused no uneasiness. The last report I have is dated almost five months after the operation, and is satisfactory. There is no trace of recurrence of the tumor. One fistula still exists. The patient uses the artificial larynx but little, being more accustomed



to communicate by writing, and he does not like to undergo the uneasiness, which is connected with its application. The trough-like shaped rubber plate, made by Dr. Kingsley of this city, which at first worked very satisfactorily in closing the œsophageal opening, has become somewhat too small on account of the tension of the soft parts. Dr. Hausmann is about to try larger ones, and I have no doubt they will succeed.

PRELIMINARY LARYNGOSCOPY UPON THE CAT

By BURT G. WILDER, M.D.

CORNELL UNIVERSITY, ITHACA, N. Y.

THE admirable treatise of George Schmidt,* is based chiefly upon observations made on the Domestic Cat, which, as he well remarks, "*Ist ein laryngoscopisches Thier ersten Ranges.*"

Notwithstanding the author's explicit directions as to securing the cat and other manipulative procedures, it is probable that most—unless already experts in comparative laryngology—will do well to preface their experiments upon the living animal by observations upon the larynx after removal from the body, and with its vocal bands set in motion by an artificial current of air. The following method for making such preliminary studies has been found very serviceable.

Remove the larynx, together with 3 or 4 *cm.* of the trachea. Push into the trachea a piece of glass tubing 8 or 9 *mm.* in diameter, and about 10 *cm.* long. Secure the tube by several ligatures. To the free end of the tube attach a piece of rubber tube about 50 *cm.* long.

The larynx may now be held at the proper distance from the eye, and air may be blown through the tube with a varying force; the relative position and degree of tension of the vocal bands may be changed by moving the arytenoid cartilages with forceps, the modifications of sound be observed, and the interior of the larynx be inspected both without and with the mirror.

* Die Laryngoscopie an Thieren, Tübingen, 1873.

For prolonged and accurate investigations, the tube bearing the larynx may be secured in any convenient way—as with the retort holder—and the air may be the breath of another person or come from a gas-receiver.

The fresh larynx should be kept moist with "normal salt solution," (15 grammes of common salt to 2,000 *cc.* of water.) The parts may also be kept in good working order if the larynx is preserved in 70 *p.c.* alcohol; but such an alcoholic specimen should be moistened while under observation with water containing about 15 *p.c* of glycerine.

The experiment may be varied by using a freshly "pithed" cat, and stimulating, with the interrupted current from a "Gaiffe" or "Drescher" battery, either the muscles themselves, or the superior or inferior laryngeal nerves, or the trunk of the vagus, while air is forced through the trachea; I ought to mention that the plan of using a long and flexible blow-pipe, by which the observer is enabled to watch what occurs while he is blowing, was first suggested, so far as I know, by Mr. C. F. Clark, a special student in the Anatomical Laboratory of Cornell University. We call it the "reversible blow-pipe," and find it useful in many ways. Ordinarily a small rubber tube is attached to the metal pipe which comes in dissecting-cases.

CASE OF RETRO-PHARYNGEAL TUMOR.

By A. T. CABOT, M.D.

BOSTON.

Ann C. æt. 50, entered the Carnoy Hospital, July 2d, 1879. The following, rather scanty history was all that a careful questioning could obtain:

'The patient for the past year has had a sore, uncomfortable feeling in her throat, which has never amounted to actual pain. Four months ago, in consequence of a slight difficulty in speech and deglution, she examined her throat and discovered a swelling in the right side. She thinks that at this time the tumor was very nearly its present size. The discomfort caused by it has increased slowly since then, but is not now excessive.

Her voice had the thick sound often noticed in children, with enlarged tonsils, and swallowing was slightly interfered with.

Upon examination a tumor was discovered filling the whole of the right side of the pharynx, extending considerably past the median line, and pushing the palate and posterior pillar of the fauces so firmly forward that the tonsil was entirely concealed.

The mucous membrane covering it was smooth and but slightly reddened.

Upon digital examination, the tumor was felt to be attached by a broad base posteriorly, and to extend up into the posterior nares and down to about opposite the thyroid cartilage.

It was rather firmly fixed, and in its upper part it was firm, resistant to the finger; while over its lower half it was soft, elastic, seemingly fluctuating. No glands in the neighborhood of the tumor were enlarged.

At the time of entrance, the patient was suffering somewhat from dyspeptic symptoms which readily yielded to improved diet with administration of bismuth subnitrat.

July 7th. Operation under ether. Tracheotomy was first performed, and a tube inserted and tied in.

This I did to guard against the inspiration of blood during the further operation. The patient was then placed in the *Rose* position, with the head hanging over the end of the table.

The tongue and palate being held apart by spatulæ, a straight incision was made in the vertical axis over the most prominent part of the tumor. The mucous membrane stripped back with the greatest ease, and the tumor was enucleated almost entirely with the fingers, a few snips with the curved scissors being required only in the rather denser areolar tissue of its posterior aspect. It had no pedicle connecting it with the periosteum beneath. The bleeding was inconsiderable and easily checked by pressure.

The patient was removed to bed, and a few layers of moistened gauze placed over the tracheotomy tube. She recovered well from the ether, vomiting but slightly, and passed a comfortable night.

July 8th. There was considerable mucous expectoration through the tube. She suffered no pain, however, and took liquid nourishment freely.

The wound in the throat looked well, but as the parts in the neighborhood were considerably swelled and ecchymosed, the tracheotomy tube was not removed.

July 9th. There was moderate fever. Along the anterior border of the right sterno-mastoid muscle and around the tracheal opening the skin was red and brawny.

The wound in the throat was covered with a thin whitish layer.

The tracheotomy tube was removed, and the wounds in throat and neck were frequently brushed with

℞ Liquor, Sodae Chlorinat, ʒ ij,
Glycerinæ, . . . ℥ ij,
Aquæ, ... ℥ iij.

Quinine was also given internally.

From this time recovery was uninterrupted. The wounds rapidly cleared off, and the cellulitis in the neck disappeared. The voice and deglutition became natural, and the patient went home, July 25th, with both wounds entirely healed, and perfectly well.

The anatomical description of the tumor was as follows:

About the size and shape of a large hen's egg, it was flattened somewhat antero-posteriorly, and indistinctly lobulated.

On section, it was firm and tough, and presented a fibrous appearance. In the lower part of the tumor, which was much softer than the upper, was a cavity of ragged, irregular walls, and crossed by fibrous bands, suggesting the idea that the fluid had forced itself among the fibrous tissue of which the tumor was made up.

The fluid, in amount about ʒ ij, was dark reddish brown, and contained shrivelled and also tolerably well preserved blood cells, together with much granular matter.

Examination with the microscope showed the solid portion of the tumor to be made up of thickly interlacing fibrous bands, with few fusiform nucleated cells in them.

These bands enclosed little spaces, which were filled with irregularly rounded, nucleated cells. The accompanying figure represents very fairly the relation of these cells to the fibrous bands in the major part of the tumor.

The density of the fibrous tissue is, however, much greater than would appear from the wood-cut. In other respects this is a very exact copy of a section examined with a Hartneck No. 7, objective, No. 3, eyepiece.

At (*a*) is a longitudinal section of a vessel (capillary) with endothelial lining.

In parts the fibrous tissue is more abundant, in comparison with the cellular portion, than is the case in this section, and again elsewhere the collections of cells are more numerous and larger. No portion is, however, mainly composed of cells.

Here and there I was able to find intermediate forms of cells giving a regular gradation from the rounded cells to fusiform ones, which blended with the fibrous bands. In the immediate neighborhood of the above mentioned cyst, the tissues were filled with granular matter, and numerous blood cells were forced in among the fibrous bands.

There was no cyst wall.

It may perhaps be doubted whether these collections of cells are not really cross sections of bundles of fibres. This is, however, certainly not the case, as is shown by the following facts: first, the cells are considerably larger than the cross sections of the fibres; secondly, they are colored by hæmatoxylon, which the fibres are not; and lastly, in small fragments of the tumor, carefully picked apart, the cells can be isolated and examined.

This tumor, although belonging very near the border line between fibroma and sarcoma, must, I think, be ranked in the former class.

In no considerable part of the tumor is the cellular element predominant, and the tendency of the cells is not to proliferate, but to form fibrous tissue.

The fibrous tumors of this region spring generally from the periosteum. This seemed to originate in the loose areolar tissue, beneath the mucous membrane, hence, perhaps, its unusual richness in cells.

The patient was heard from in March, 1880, and was then in good health, with no return of the tumor.

CLINICAL NOTES.

CONTUSION OVER LARYNX: PROBABLE FRACTURE OR RUPTURE; EMPHYSEMA; LOSS OF VOICE FROM SWELLING OF VENTRICULAR BANDS AND ARYTENO—EPIGLOTTIC FOLDS, PROBABLY FROM EFFUSED BLOOD; RECOVERY.

By JOHN H. PACKARD, M. D.,
PHILADELPHIA.

Edward Gonn, a laborer, giving his age as 54, but looking much older, was admitted into the Episcopal Hospital, at mid-day, October 20, 1879, having about an hour before been kicked in the throat by an other man. There was very marked emphysema, with decided but not great swelling, in the region of the larynx and trachea, extending downward as far as the second rib, where it was somewhat sharply defined. Any movement of the neck gave rise to great pain, and there was much tenderness on pressure over the seat of injury and in its neighborhood. He was constantly expectorating blood, with somewhat frothy mucus, and had great difficulty in swallowing. Voice husky, almost extinct.

P. M. Pulse 92; temp. 104°. Ordered a suppository containing gr. iij of sulphate of quinia. Milk and beef tea were given by the mouth.

October 21st, A. M.—Pulse 100; temp. 100°. Emphysema increased, swallowing more painful; but he says he feels better.

P. M.—Pulse 104; temp. 103.5°. Beef tea and brandy given by enema. As he could not retain this, he was ordered beef tea, ℥ ij by enema every two hours, with the addition at night of tinct, opii gtt xxx.

October 22d, A. M.—Temp. 100.25°. He says he feels better, and has less pain over the trachea. Some emphysema was noticed over the nape of the neck, extending downward towards the scapulæ, and marking out pretty accurately the outline of the

trapezii muscles. The emphysema in front was certainly not more marked, perhaps rather less.

P. M.—Temp. 101.5°. The sputum to-day has been lessened in quantity, but is still strongly streaked with blood.

October 24th.—He is better in every respect, but his voice is still a hoarse whisper.

October 25th.—He was able to swallow a small quantity of bread and porridge.

From this time his condition steadily improved, and on November 2d he was allowed to get out of bed.

On the 17th the condition of the interior of the larynx was as shown in the sketch. It had been examined previously with the laryngoscope, but nothing could be distinctly seen except general swelling and congestion of all the tissues. He was now able to speak in a louder whisper, but still nothing more.

From this time he gained steadily in strength, and his voice became slightly clearer, but he was still unable to speak naturally when discharged, December 15, 1879.

It would seem that the violence inflicted on the larynx in this case was such as to rupture a vessel beneath the mucous membrane from which blood was copiously effused. The membrane itself must have been also ruptured, and thus the mucus was tinged with blood, while air found its way into the submucous areolar tissue, to an extent limited by the attachments of the fascie of the neck.

As a matter of course the question of fracture of the cartilages presented itself ; but there was no evidence, either in alteration of shape or in crepitus, of such a lesion.

The propriety of tracheotomy was also discussed, lest dyspnœa should suddenly increase to such an extent as to threaten the immediate extinction of life ; but it was thought that the opportunity

for watching the case in a well-appointed hospital, warranted the adoption of the expectant course which the result justified.

[It should be added that the patient returned to the Hospital about the middle of January, with symptoms of suppuration in the neighborhood of the larynx; but he declined to remain for treatment. Very probably necrosis of some portion of the cartilage, detached by the injury, had taken place.]

A CASE OF PROBABLY CONGENITAL PAPILLOMA OF THE LARYNX. TRACHEOTOMY. SUBSEQUENT THYROTOMY. DEATH FROM PNEUMONIA.

By H. A. JOHNSON, M.D.,
CHICAGO.

In April, 1877, Dr. M. Manheimer, of Chicago, brought to me for examination—Fruse, male, æt. about three years. The father of the child stated that the boy had for a long time difficulty of breathing, which had recently been getting worse. There was complete aphonia, and there had been from early infancy and perhaps from birth, a peculiar character in the cry.

An effort had been made by Dr. Manheimer, an expert in laryngoscopy, to see the glottis, but without success. I found upon repeating the effort that the epiglottis was curled and rolled like a dried leaf and falling back over the glottis so as to completely shut it from view. The child struggled and had quite a severe attack of dyspnœa. My belief was that there was a tumor in the larynx, probably congenital and increasing in size.

April 15, 1877, with the assistance of Dr. Manheimer I performed Tracheotomy, intending at the same time to continue the section upward and explore the larynx. The little patient, however, was so completely prostrated by the prolonged struggle for breath during the previous weeks, that it was thought best to wait before completing the operation of Thyrotomy.

His general health was very soon restored, and through the summer and early winter appeared to be excellent.

In February, 1878, he began to have paroxysms of dyspnœa again, though the tube was perfectly free and the trachea below it apparently unobstructed. These attacks became alarmingly frequent and severe.

March 10, 1878, with Drs. Manheimer and Banger, I separated

the thyroid, dividing the cricoid, and found a papillomatous growth attached to the left and posterior portion of the larynx, one portion above and one below the cord. The attachment was below the cord.

The growth, about the size of a filbert, was removed, the base lightly touched with nitric acid.

The position of the patient during the operation was such that the blood gravitated into the pharynx and none passed into the trachea. The parts were brought together and held by sutures and adhesive plasters. The canula was retained.

I visited the patient three days afterward and found the little fellow standing by a window occupied with his toys. The day was raw and wet, and I directed the mother to carefully guard the little one from cold. The appetite was good, and in every respect he seemed to be doing well.

The next day, the fourth after the operation, he was taken with a chill and died of pneumonia on the eighth day from the operation.

Query 1st. Was the tumor congenital?

Query 2d. What was the cause of the dyspnœa or paroxysms of difficult breathing preceding the operation of Thyrotomy?

It certainly was not a mechanical obstruction of the canula or trachea, but was spasm of the respiratory muscles. Was this reflex from the pressure of the tumor upon the nerves of the larynx? Upon opening the larynx the tumor protruded through the incision as though it had been compressed.

Query 3d. Was the pneumonia due to the operation? No blood gravitated, I think, into the bronchi during the operation.

A CASE OF ACUTE IDIOPATHIC PERICHONDRITIS OF THE NASAL SEPTUM TERMINATING IN ABSCESS.

By CLINTON WAGNER, M. D.,
NEW YORK.

Miss B. a well known young actress, connected with one of our most popular theatres, consulted me early in February, 1879, for a slight sub-acute pharyngitis; she also called my attention to what she termed a boil on her nose. Upon examination, I discovered a small circumscribed hardness to the left of, and near the junction of the cartilaginous with the bony septum, internally a hyperæmic condition of the mucous membrane, especially on the

left side. I directed the application of warm fomentations, and informed her that it would probably be ripe for opening within a couple of days. On the following morning, Friday, she again called at my office but no marked change had taken place. I did not see her again till Monday, when I was requested to visit her at her residence. I found the nose immensely swollen and œdematous, pitting upon pressure and of a dark, dusky color ; intense pain extending to the frontal sinus and the brow, no pus as yet, but every indication of its speedy formation.

On Tuesday afternoon, the swelling of the nose externally had greatly increased, both nostrils entirely occluded by the swollen septum, breathing was performed through the mouth only, temperature 105°, pulse 145, had been somewhat delirious during the day. Introduced my knife into the left nostril, and incised freely the septum and mucous membrane covering the turbinated bones the incision into the septum was followed by the escape of a large amount of thick creamy pus containing plugs of slough—no pus on the right side. The quinine and iron which she had been taking for several days was increased to grs. x with gtt. xxv of tinct. iron every three hours. At 10 P. M. I again saw her, incisions were made on the right side and exit given to a large amount of pus. At 2 A. M. her mother, alarmed by her heavy breathing, tendency to stupor and apparently sinking condition, sent for me in haste. I found the incisions closed, they were reopened and the retained pus allowed to escape ; champagne, beef tea, and milk were ordered to be given freely. During the remainder of the night there was no interruption to the flow of pus; in the morning the temperature had fallen to 101°, pulse to 110. She continued to improve, but weeks elapsed before she recovered sufficient strength to resume her duties at the theatre.

The abscess appears to have formed in the body of the cartilage and for some time after the subsidence of the acute symptoms, I could carry my probe, by introducing it through the incision made by my knife, into the cavity or space thus hollowed out by the suppuration, to the vomer. By means of a small syringe with a long fine nozzle, I drew off daily the pus formed in this cavity, after which, I washed it out with a weak solution of carbolic acid, a compress of cotton was then introduced into the nostrils thus aiding the closing of the cavity. No deformity or loss of symmetry of the external organ followed, but this I attribute to the fact of the cartilage at its junction with the vomer having escaped destruction.

Abscess of the septum when not of traumatic origin usually occurs as a complication in cases of syphilitic, strumous or catarrhal rhinitis. Acute idiopathic perichondritis of septum is of very rare occurrence, the case above reported is the only one I have encountered in an experience embracing over four thousand cases of nasal trouble. In regard to treatment the early and free use of the knife is absolutely necessary, even at the risk of destroying permanently the outward symmetry of the nose, as a delay of a few hours may result in fatal meningitis.

CASE OF CANCER OF THE LARYNX.

By GHISLANI DURANT, M. D.
NEW YORK.

Early in April, 1879. M. du S——, a Belgian, began to be troubled by pain in the left side of the neck, accompanied by a constant inclination to clear the throat. Gradually the area of pain increased, extending upward to the left eye and ear, and downward to the throat, and accompanied by great itching. Diagnosis, neuralgia, and so treated.

A few weeks later he began to expectorate, from time to time, a drachm or two of blood mixed with viscid mucus. The breath grew fetid, and the voice harsh. In May, able to speak scarcely above a whisper, he consulted Dr. Castleman, of Brussels, who (in the presence of two colleagues) diagnosed *Cancer of the Larynx.* A microscopical examination of the sputa showed in it mucous, pus and blood globules, and epithelial cells.

Dr. C. applied locally nitric acid and bromic acid, and prescribed for internal administration,

℞

Liquoris arsenici et hydrarg. hydriodatis,	ʒ ij
Aquæ distillata, ...	℥ iiiss
Syrupi zingiberis, ...	℥ ss

M.

and apparently with wonderful success. This treatment was followed until December, when the local application was changed to a saturated solution of Argenti nitrat, the cancerous vegetations having disappeared.

Urgent business calling M. du S. to America, Dr. C. ad-

vised him to avail himself, if possible, of the services of the ship's surgeon and continue the local application ; but feeling better from the sea-voyage, M. du S. concluded, having my address, to wait until he saw me.

On January 24th M. du S. presented himself to me. He is 42 years of age, tall, thin, with a sallow complexion, and an unhealthy look. His voice is very rough and harsh. Examination shows the laryngeal mucous membrane of irregular mottled color, with purple discoloration here and there ; the tumefied epiglottis has its left side drawn slightly upward and forward toward the tongue, and its anterior surface is the seat of a deep cicatrix extending as far as the pharyngo-epiglottidean fold ; the left arytenoid cartilage is more voluminous than the right, and above the arytenoidean insertion of the left chorda vocalis is a cicatricial depression. On the posterior wall of the larynx, several white cicatrices and a single spot showing signs of progressive ulceration. This spot I immediately touched with the sat. sol, of Argenti nitrat., and repeated the application two days later. On the day following M. du S. returned to Belgium.

Cancers of the larynx are rare, and cures rarer still. The only ulcer existing at the time of M. du S.'s visit to me was, it is true, an ill-looking ulcer ; yet it did not present that special bosselated look which so positively characterizes cancerous vegetations. The larynx showed no sign of former trouble save what might be seen in a syphilitic ulcerated larynx, but the patient declared himself to be free from all syphilitic taint. He promised to advise me further of his condition, which I will communicate to the ARCHIVES.

STENOSIS OF THE LARYNX FROM SYPHILIS. TRACHEOTOMY. DILATATION WITH METALLIC SOUND. CURE.

BY MORRIS J. ASCH, M.D.,
NEW YORK.

Mrs. B., married, æt. 35 years, presented herself at the clinic of the Metropolitan Throat Hospital, December 1, 1876. She was completely aphonic and was suffering considerably from dyspnœa. She had been under treatment for throat disease for three years. A laryngoscopic examination showed the parts to be ulcerated and deformed to such an extent as to be almost unrecognizable. The epiglottis was completely destroyed. The aryteno-epiglottic folds

were thickened and the ventricular bands adherent to such a degree that the larynx was almost entirely closed, an opening scarcely as large as a small pea remaining. The parts below were quite invisible.

The patient, a respectable married woman, gave no history of syphilis, but the appearance of the parts admitted of no other diagnosis. She was put on large doses of iodide of potash without any amelioration of the symptoms.

December 13th.–The dyspnœa increasing, tracheotomy was performed. The parts were anæsthetized by the spray of Rhigoline. The patient showed no sign of suffering pain during the operation, which was almost bloodless. A silver tracheotomy tube was inserted, and anti-syphilitic treatment instituted.

February 5th.—The adhesions were broken up as far as possible with a laryngeal sound, and in a few days a very decided improvement was visible in the laryngeal opening. The larynx now became extremely sensitive, a spasm of cough following the slightest contact of the sound.

Applications of iodine and glycerine were made every third day, and in June dilatation of the larynx with a flexible metal sound was commenced. The size of the sound was gradually increased with good results. Some ulceration showed itself at the opening with the effect of making it wider, and on October 17th the healthy space was so much enlarged that the tube was permanently removed.

A laryngoscopic examination made November 16th showed a very satisfactory condition as regarded respiration. The trachea was visible to the third ring. The vocal cords of both sides were seen to be destroyed with the exception of a small portion of the right one anteriorly. Great deformity existed in the larynx, but the rima glottidis was quite open and all hindrance to respiration had disappeared. A small external tracheal opening present up to this time had entirely healed.

December 17th.—The voice was rough but quite strong, and in a few weeks the patient sailed for Europe cured.

I would call attention to the good results in this case of dilatation by the sound made of flexible metal and bent to suit the case ; and to the employment of local anæsthesia. The patient, who was entirely conscious, suffered no pain during the operation, which the absence of bleeding rendered extremely easy, while the vomiting which nearly always follows the administration of ether was absent.

PRIMARY PHLEGMONOUS INFLAMMATION OF THE RIGHT VENTRICULAR BAND.

By E. L. SHURLEY, M.D.
DETROIT.

Mr. H. C. S., æt. 35 years, book-keeper, married, "in good flesh," nervous, family history excellent, digestion until very lately good, sometimes constipated, not a very good sleeper, not frequently the subject of colds, but suffered last summer from an obstinate attack of muscular rheumatism (lumbago.) Was sent to me by his family physician on account of a laryngitis of about two months' duration, which was rapidly growing worse.

December 11, 1879, he has an incessant laryngeal cough ; is very apprehensive ; has frequent spells of a sense of suffocation ; no fever now, but says he has some every evening ; has great pain when speaking, and more or less all the time ; very little expectoration ; has been using sprays from a steam atomizer, and been taking numerous expectorants, together with quinine on and off ; irregularly aphonic.

Laryngoscopic examination shows a hyperæmic condition of the pharyngeal as well as of the laryngeal structures, the latter more marked. Fauces very irritable. Both ventricular bands red and swollen, the right more than the left. Vocal cords nearly obscured, appear congested. Used a spray in larynx of Ac. carb. (gr. v, ad. oz.).

December 12th, the right ventricular band more swollen, covering the vocal cord from sight ; breathing more embarrassed, and pain a little greater. No external swelling apparent about neck. Had fever last night, and is very much constipated. Some dysphagia. Ordered a cathartic of podophyllin, to be followed by 5 gr. doses, every three hours, of quinine.

December 13th, is worse. Cathartic operated. Breathing more difficult. Slept very little last night, on account of sense of suffocation and pain. Examination shows right ventricular band still swollen, and a projection from about the middle of its upper surface, about the size of a large pea. Attempts to pass in a probe failed, and excited a laryngeal spasm which was very painful and quite alarming. Gave, in office, a vapor inhalation of Ac. carb. and Tr. iodine, and directed the use at home of a vapor inhalation of Co. tr. Benzoin every three or four hours, with the use of mustard for counter irritation.

His condition progressively grew worse (causing preparations

for tracheotomy on one or two occasions), until during the night of the 16th, shortly after an inhalation of benzoin, he was startled with, as he says, "a filling up of his windpipe," when he immediately expectorated some muco-pus, with a very little blood, which directly relieved him, to such an extent that he soon fell into a deep sleep, an event which had not occurred for a long time previously.

On the 17th an examination showed a decided lessening of the swelling of the ventricular bands. The right was now so retracted as to allow a view of the vocal cord, and the projection before spoken of had entirely disappeared. The subjective symptoms were now greatly abated, and he was expectorating considerable mucus, and relished his food. The voice, which had been lost, had returned to a slight degree, but the larynx was still hyperæmic, and he had considerable cough. He gradually improved, and, in a week after, resumed his avocation.

At this time, Feb. 26th, he has some cough (slight), and examination shows the intra-laryngeal structures still somewhat hyperæmic; he, however, feels no pain, unless after prolonged talking, and his voice is but very slightly hoarse. He complains mostly of a sense of dryness of the throat.

March 1, 1880, he is "all right," except from constant apprehension of more trouble with his throat or lungs—hypochondriacal.

Comments.—This seems rather an unusual case, inasmuch as there is positively no syphilitic element in the etiology, and, as far as I can ascertain, no traumatic cause. The case was apparently in the beginning a simple acute laryngitis, becoming sub-acute, and finally, for some unaccountable reason, resulting in abscess, the initial seat of which, I believe, to have been in the laryngeal sac or ventricle. There was no evidence pointing to perichondritis.

CASE OF RECURRING HŒMORRHAGE FROM VOCAL CORD.

By ANDREW H. SMITH, M.D.
NEW YORK.

Mr. L——, æt. 27, an actor, called on me with the following history:

For the past fourteen months has frequently spat up slightly bloody sputa after prolonged use of the voice. Has had no con-

stitutional disturbance, and has not lost weight. Has been treated a great deal for "catarrh of the throat," but has never had a laryngoscopic examination. Voice gives out under strain. Spits now a little blood all through the day, and a larger quantity during and after the exertion of the evening.

On inspection the back of the pharynx was seen to be somewhat hyperæmic.

The first glance with the mirror showed a spot of blood about a line in diameter, on the right vocal cord near its attachment to the vocal process of the arytenoid. The effort of vocalization caused this to spread along the whole length of the cord, and then, when the cords were in contact, to pass over to the left one, so that in a moment the superior surface of both cords was completely covered.

A solution of per-chloride of iron was applied, and the following morning no trace of the hœmorrhage was to be seen. The patient stated, however, that while acting the previous evening he had spat a little blood. The next day the account was the same, and the mirror showed a slight stain again at the same place on the right cord. The blood apparently oozed at a single point from an unbroken surface, as it is sometimes seen to do in the nose.

Several days passed in this way, the bleeding being stopped for the day by the morning application, but being excited again by the exertion of the evening. As the patient could not give up his engagement, and treatment without rest was of no avail, he ceased his attendance until a more favorable opportunity should occur.

PRESSURE UPON THE RECURRENT NERVE.

By WILLIAM PORTER, M.D.,
ST. LOUIS.

Mr. H., æt. 27, desired treatment in January, 1880, on account of hoarseness, spasmodic cough and slight dyspnœa upon exertion, beginning 18 months previously and gradually increasing. He was in all other respects well. Careful examination revealed no disease in the lungs or bronchi; neither was there history of constitutional fault. There was a small lymphoid tumor to the right of the trachea, just below the plane of the cricoid cartilage. A laryngoscopic examination showed marked congestion and incomplete abduction of the right cord, which was also relaxed.

In the absence of other known cause, it was thought that the symptoms were due to irritation of the recurrent laryngeal nerve, from pressure. In another somewhat similar case (*Alienist and Neurologist*, No. 2, 1880), the injection of acetic acid into the morbid mass had produced resolution. In this instance, however, it was deemed best to remove the hypertrophied gland—for such it proved to be—by the knife, because it was very hard, small and deep-seated. There was nothing peculiar about the operation, though the location rendered careful dissection necessary. The gland removed was about 3 cm. in greatest diameter, and a portion of it projected deep into the groove between the trachea and œsophagus in the course of the recurrent nerve. The wound healed rapidly, and the troublesome symptoms disappearing, he was discharged from treatment, three weeks after the operation.

CASE OF POLYPUS OF THE SOFT PALATE WITH HYPERTROPHIED TONSILS.

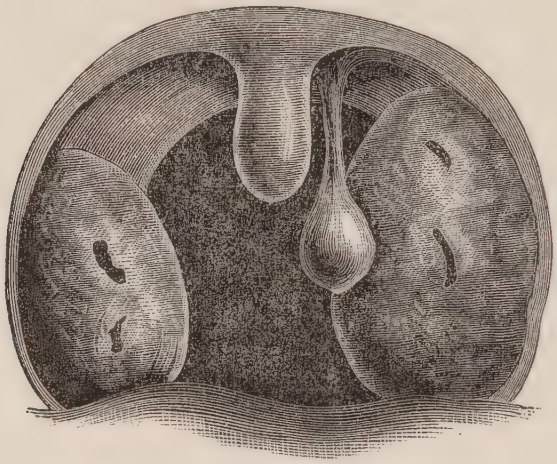
By E. G. MAUPIN, M. D.,
OF CHARITY HOSPITAL, B. I.

Mary S., aged 19 years, single, with a good family history, has had the usual diseases of childhood, measles, scarlatina, etc.; otherwise has always been healthy, except that, three years ago, after seeing a playmate fall from a window she became so frightened as to "go into a fit." She became totally unconscious, and after getting home slept for hours. She continued to have "fits" about once a month, but they bear no relation in time to her menstrual periods; her first menstruation was not until some months after her first fit. The attacks are ushered in by a cry, after which she falls (or not), bites very energetically, and "throws herself around." After them she "gets sick at her stomach, and has bad headaches." She says that sometimes she is conscious of "hollering and kicking," but generally she is unconscious.

She has long felt that there is something wrong in her throat. On January 1, 1880, she had a very sore throat, which for two weeks confined her to bed; she had a bad cough at the time. Since then she has had four exacerbations accompanied by considerable febrile movement, great dysphagia and pain, but no cough. She has had an exacerbation, and has been complaining

very much of pain for the past week. During a part of the time she remained in bed.

Examined on January 24th, the fauces and pharynx were found much congested; both tonsils very much enlarged and degenerated, the left more so, and reaching almost to the median line. Tonsils rough looking, surfaces like a nutmeg, with two orifices in each leading apparently to very deep chasms. Posterior palatine arch of left side is visible for a very small distance only at upper part. Hanging by the left side of uvula is



a soft tumor, about size of uvula, of œdematous appearance, and somewhat of pyriform shape, which seems to be attached by a broad base to the upper portion of the posterior palatine arch, near uvula, with a cord-like pedicle between attachment and tumor. The broad membranous attachment contracted from the base toward the middle, thence widened again to the tumor proper, but here did not present so great a breadth as at the base. The pedicle presented somewhat the appearance of a partly open fan. At times the fan-shaped pedicle became twisted, and then looked like a cord nearly all the way from the tumor to the palatine arch. Again, this small pendulous tumor would hang closely applied to the uvula, seeming a part of it, and at times gave the appearance of a bifid uvula. Sometimes, too, it would adhere to the left, larger tonsil, and draw the uvula over with it.

On January 31st, Prof. Elsberg removed the left tonsil by fixing it with his tonsil forceps, and carefully dissecting it out with a bistoury, leaving the palatine arches intact; and on February 27th, the Professor removed the little tumor by snipping it off with scissors.

March 4th.—Since the removal of the left tonsil, the patient has suffered no pain on that side, and has had no "fit;" but she complains a great deal of pain on the right side. I removed the right tonsil to-day.

FOREIGN BODY IN POSTERIOR NARES.

By D. BRYSON DELAVAN, M.D.,
NEW YORK.

Mary S., æt. 11.: had suffered nine years from a severe ozœna for which, although repeated attempts had been made, she was unable to obtain relief. Examination showed the left nasal cavity to be normal. The right cavity was completely occluded, its posterior third being filled with what appeared to be a mass of crusts and suppurating tissue. A probe passed through this mass from before backward met with firm resistance at a depth of one and one-half inches from the entrance to the nostril. The opposing body felt hard and rough, and in shape seemed spheroidal, with a well-marked projection at one side, which on further exploration appeared to form a loop. The nostril being too narrow to admit a slender forceps the tip of the probe was bent in the shape of a hook which by a little careful manipulation was slipped into the above-mentioned loop and firm traction made with the result of bringing to light a shoe-button thickly encrusted with calcareous deposit. Into the eye of this button the curved end of the probe had fortunately found its way. Thorough examination revealed extensive thickening and deep ulceration of the pituitary membrane over the posterior third of the inferior turbinated bone and the corresponding portion of the septum, together with slight displacement of the latter. There was no evidence, however, that the bones were in any way diseased. Patient was ordered a weak solution of potass. permanganate in water, to be used with a nasal douche three times a day. A week after the operation the offensive discharge had entirely ceased, the ulceration was completely healed, and excepting a moderate degree of displacement of the septum toward the left, not a trace of the trouble remained.

TRANSACTIONS OF SOCIETIES.

"N. Y. LARYNGOLOGICAL SOCIETY."

Academy of Medicine, February 12, 1880.

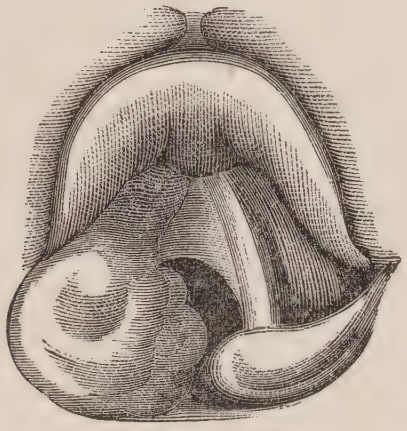
Dr. R. P. Lincoln,
PRESIDENT.

Dr. Elsberg presented a patient for examination who had suffered from syphilitic occlusion of the rima glottidis. The following history was read by Dr. C. C. Rice, formerly house-surgeon in Charity Hospital:

C. R., æt. 41 years, native of Germany, single, a barber by occupation, was admitted to the hospital in Sept., 1876. Family history is good. At the age of 19 he first contracted the initial chancre, which was followed regularly by an erythematous eruption. enlarged cervical glands, pharyngitis, etc. Two months later he received mercurial treatment, when the specific symptoms disappeared.

In January, 1877, acute catarrhal laryngitis first set in when, as he stated, he suddenly became hoarse and in a little time entirely lost his voice, and severe dyspnœa appeared. Examination of the larynx showed swollen ary-epiglottic folds and ventricular folds, which obscured the vocal bands from view. The whole was covered by muco-pus. After a time these symptoms subsided, and a condition of chronic laryngitis followed. The right arytenoid cartilage was enlarged, and the right band scarcely moved in phonation, and seemed to be pushed toward the median line by the tumefaction of the surrounding structures. There was as yet no ulceration. Cough, night sweats, etc., were present. In Feb., 1878, an eruption of pustules and a gummy tumor of the forehead appeared. Treatment removed them. At this time

there were slight dyspnœa and dysphonia due to thickening of the tissues on the right side of the larynx. Ulceration of the larynx now existed. In July, 1878, Dr. Elsberg discovered a cicatricial fibrous membrane, which occluded nearly the anterior three-fourths of the rima-glottidis. It was pale and nearly the color of the vocal bands. On the right side its attachment began at the inner border of the ventricular fold, and passed obliquely downward over the right band to the lower margin of the left band, as seen in the accompanying woodcut.



The patient was now aphonic and suffered from dyspnœa. In June, 1878, Dr. Elsberg began the removal of the membrane by the galvano-cautery and knife. After a succession of operations it was removed, piece by piece, and the patient's voice was restored.

In January, 1879, his voice again grew feeble, due to a cicatricial band forming on the old wound. Dr. Elsberg thinks this was due to using the knife. It was removed by galvano-cautery alone. The anterior fourth of the left band was also found adherent to a stump of the cicatricial tissues in the anterior commissure, and was freed by galvano-cautery. The condition of the patient at the present time is as follows :

The epiglottis is normal ; the left arytenoid normal ; the right arytenoid is still swollen, and somewhat anchylosed ; the vocal bands look normal, except the left, which shows one or two points of attachment of the former membrane ; the movement of the right vocal band is impaired ; at the anterior commissure below the vocal bands is a stump showing the depth to which the membrane formerly extended.

Remarks.—Dr. ELSBERG said that he had reported, in 1874, 11 cases of membranoid occlusion of the rima glottidis from syphilis,

six of which had been under his own observation; since then he had seen three more, and that 13 had been reported by others, making 22 cases that he knew of to date. He called attention to several points of interest, which were: 1. This condition, in his practice, had occurred in a little less than two per cent. of all cases of laryngeal syphilis; 2. The seat of the membrane in most cases is not above the vocal bands, and in the horizontal plane of the larynx (in this case it was oblique and higher on the right than on the left); 3. The thickness in this case was about eight millimetres, but in all the other 21 it had not been more, usually even less, than four millimetres; 4. The microscope showed only cicatricial fibrous structure; 5. The sex of the sufferers was stated to have been in his own cases eight times male and once female, in the cases of others nine times male and four times female, making in the 22 cases 17 times male and 5 times female; 6. The treatment is removal, preferably, by galvano-cautery, as after using a knife the parts usually reunite. Dr. Photiades, of Constantinople, has devised an ingenious combination of laryngeal catheter and knife for its removal.

Dr. Bosworth presented the following two cases:

Jno. McP. Syphilitic tumor of the trachea, with paralysis of post-crico arytenoid muscle of left side. He gives a clear history of syphilis, and has had the iodide treatment for several years. The tumor looked red, irregular, about the size of a bean, and was situated at the fifth or sixth ring.

Remarks.—Dr. Lefferts had seen and treated the same patient some time since for a number of months. He had given 80 or 90 grains of iodide of potash daily, and mercury; had examined him, and found paralysis of the vocal band; looked for pressure on the recurrent laryngeal nerve, but did not find it; examination for aneurism revealed nothing. He also suggested gummy tumor in tracheal wall, and, as iodide seemed to improve him somewhat, it seemed probable. The patient however grew worse again, and he believed the true solution would only come with the post-mortem. He says he can only see by the present light a little bulging of the inner wall of the trachea, and doubts the existence of a tumor.

Dr. Duncan stated that he had examined the patient by sunlight and could not see a distinct tumor, but only an irregularity in the tracheal wall.

Dr. Bosworth remarked that he saw the rose-colored tumor

distinctly, and believed that the symptoms of the case bore him out in his statement about its existence. That there were recurrent spasms which could occur only from an intra tracheal tumor, as any constant pressure on the nerve would produce constant paralysis of the muscle.

The second case presented by Dr. BOSWORTH was one of naso-pharyngeal tumor in a boy of 16. It was of slow growth and fibrous, and filled up the posterior nares and vault. There was much hemorrhage.

The paper of the evening on "The Treatment of Follicular Disease of the Naso-Pharyngeal Space," was read by Dr. BEVERLY ROBINSON.

Medication was both general and topical. Douches and sprays injurious, except for cleansing purposes. In nine-tenths of the cases the upward Sass' spray would cleanse the surface when Dobell's solution was used; in the others, where there were hard dry crusts, a right angled brush was used to remove them. The spray is a good deodorizer, and tends to lessen vascularity. As the secretion diminishes, Dobell's spray should only be used once in four or five days, as it is relaxing. He had tried Rumbold's prescription of warm vaseline, carbolic acid and glycerine, and had found it useless, and it clogged up the spray tubes.

Powders had yielded the best results, various combinations of tannin, gum and morphine, iodoform and gum camphor, belladonna, bismuth, calomel and myrrh were named as valuable. In foul breath the following was good:

℞. Acid, salicylic, ... ʒ ii
Pulv. g. acaciæ, ... ʒ iv
M

Dr. DE COSTA also uses salicylic acid internally in this disorder. In using powders he forces the curved nozzle well up behind the palate before expelling them, so as to avoid choking the patient. Iodine, and iodine and glycerine were used, also dry iodine vapors. He used Wales' method of tying up the palate, in order to get at the vault when strong or caustic applications were to be made. He referred to the use made of a small catheter, as suggested by Dr. Duncan, for passing the tapes through the nostrils.

Fused nitrate of silver, chromic acid, etc., were applied once in four or five days, not oftener, as it clogged up the glands.

Lincoln's curved post-pharyngeal electrode was tried with galvano-cautery. The bone covering burnt off.* Shurley's long galvano-cautery knife was referred to, but not from personal experience in its use. Electricity had been spoken of as a cure; his trials of it were unsuccessful. He had seen but one or two cases of genuine adenoid degeneration of the tissues of the vault.

Dr. Elsberg exhibited a very beautiful and ingenious double air receiver for holding either compressed or rarified air. It consists of a large receiver and a smaller one above it, on which are two guages, one for the indication of positive and the other for that of negative pressure, each provided with a stop-cock. The two receivers are connected by a tube, in which there is a stop-cock. The large receiver has two additional apertures, each provided with a stop-cock, to facilitate the attachment of a tube from either an exhaust or a pressure pump.

The large receiver may be filled with air under a pressure of 50 lbs., and just as many pounds as required can be let into the small receiver, from whence it is conveyed to the spray-tube, etc. Its advantages are: 1. Economy of consumption; 2. Any desired amount of pressure can be exactly obtained; 3. A current of two different pressures can be used alternately or at the same time.

Dr. Bosworth presented some thermo-cautery irons of various shapes to be used in the throat or nares, either red-hot or coated with caustic.

Wm. F. Duncan,
Secretary.

* Dr. Lincoln remarked that he used a hard rubber shield.

REVIEWS AND BOOK NOTICES.

Klinik der Krankheiten des Kehlkopfs, der Nase und des Rachens, Von Dr. Carl Stoerk, ä, ö, Professor an der Universität zu Wien ; Mitglied der K. K. Gesellschaft der Aertzte daselbst ; corresp. Mitglied der Gesellschaft für Natur und Heilkunde zu Dresden ; Ehren-Mitglied der Laryngological Society in New York und Ritter der Kaiserl, Russisdren, St. Annen Ordens, III Cl.

II Hälfte, Krankheiten des Kehlkopfes und der Luftröhre, Local Therapie, Instrumenten und Operations-Lehre, Künstliche Stimmbildung ; Mit 107 in den Text gedruckten Holzschnitten und 4 Tafeln in Farbendruck, Stuttgart, 1880.

This forms the second, concluding and larger part of Stoerk's Clinical Manual on Diseases of the Throat, Nose and Pharynx. It has come to us so lately that sufficient time has not been at our disposal for the careful perusal which should precede a review in the Archives, and we are thus confined to a brief notice based upon a cursory examination of considerable portions of its contents. By the death of the laryngoscopic pioneers Czermak and Türck and the removal of Semeleder to Mexico, Dr. Stoerk is now the oldest living authority on laryngoscopic medicine in Europe, and it is meet that his ripe experience of nearly a quarter of a century of arduous and conscientious work should be permanently embodied in an elaborate treatise.

The volume before us commences at the seventeenth chapter, and comprises fourteen chapters arranged as follows :

XVII. The diseases of the mucous membrane of the larynx.
XVIII. Inflammations of the perichondrium.
XIX. Tuberculosis of the larynx.
XX. Histological observations on laryngeal tuberculosis.
XXI. Syphilis of the larynx.

XXII. Seborrhœa of the saccular glands in the mucous membrane.

XXIII. Lupus and lepra of the larynx.

XXIV. Neuroses of the larynx.

XXV. Morbid growths of the larynx.

XXVI. Foreign bodies in the larynx.

XXVII. Diseases of the trachea.

XXVIII. The topical treatment of laryngeal affections.

XXIX. The treatment of laryngeal stenoses; and

XXX. Speech in air-tight closure of the larynx and artificial phonation.

Most of these chapters are divided into numerous sub-sections to indicate which would require a repetition of the entire table of contents. Though this table is quite copious, the lack of an index is a great source of regret, a deficiency to the filling of which we would prominently call the attention of the author if he desires his handbook to be really a working manual for the busy practioner, rather than simply a volume of reference for the specialist.

The arguments and assertions in the text are enforced by the details of corroberative cases from the author's practice and illustrated by numerous well-drawn wood-cuts, the laryngscopic drawings being almost invariably larger than nature. The chromo-lithographic plates equal those of Türck, of which they seem to be almost a continuation, as they emanate from the skilled pencil of Dr. C. Heitzmann.

Tuberculosis of the larynx occupies sixty-seven pages, independently of some references to the subject under the heads of perichondritis and other subjects. A discussion of its dependance upon miliary deposit, scrofulous infiltration or simple inflammation is traced; but the rarity of miliary infiltration at the surface of the mucous membrane is strongly indicated, the few cases acknowledged as having been detected by the author having been tuberculosis of subacute course with acute exacerbation in its last stage. The process is minutely described as laryngoscopically watched in various localities; tuberculosis of the epiglottis, ary-epiglottic folds, vocal bands, meso-arytenoid folds, etc., being discussed in as many separate sections, but we fail to notice any mention of the characteristic pyriform infiltration of the posterior portions of the ary-epiglottic folds —certainly a frequent manifestation. The positive evidence of

tuberculosis by laryngoscopic inspection in certain cases, long before it is capable of detection by physical examination of the chest is insisted on and confirmed by records of several marked cases. The therapeutics of this subject is summarily dismissed in seventeen lines to the effect that topical treatment of all kinds is useless, and the only thing commendable is methodic milk-cure with favorable climatic surroundings. The only treatment that Stoerk recommends in addition to the milk-cure is the propulsion upon the ulcerated portions of the larynx of morphia powder rubbed up with sugar of milk or gum arabic, to relieve pain for the time being and thus favor deglutition.

An entire chapter, albeit a small one, is devoted to seborrhœa of the follicular glands of the mucus membrane, which is nothing more than folliculitis with retention of the contents of the distended and diseased follicles.

We notice the term chorea laryngis used, though not prominently, in the section on hyperæsthesia, but there is no description of the peculiar movements of the vocal bands which have given origin to the term. Large doses of quinine, with attention to the cause of the malady, has promptly yielded the author satisfactory results.

The chapter on morbid growths is divided into connective tissue tumors and carcinoma, and under the former are discussed only papilloma, myxoma (mucous polyp), fibroma and ecchondroma. In the removal of growths preference is expressed, as a matter of course, for the use of the author's excellent guillotine in some of its forms ; but the various methods in vogue by others, even to the use of the galvano-cautery, is fully described and amply illustrated. A remarkable table follows of sixty cases of morbid growth, removed upon the very visit when first detected or shortly after, illustrating the choice of instruments and certainly exemplifying an unusual degree of manual dexterity in the operator.

The chapter on stenosis of the larynx illustrates Schrötter's manœuvre in that observer's own language, and likewise a tracheo-laryngeal dilator of the author, used successfully for several months by a child seven years of age. The latter consists in a tracheal canula with a large fenestrum through which a bivalve dilator is thrust up into the larynx.

The concluding chapter on artificial phonation is chiefly devoted to detailing some of the author's experiments in forcing air into the mouth in cases of complete stenosis of the larynx, so as

to play upon a reed retained in the mouth to produce the sound which is to be broken up into articulate speech in the usual way. We have been surprised to see no mention of Gussenbauer's artificial larynx or voice tube ; the more that, although the chapter is upon air-tight stenosis, mention is made of Czerny's experiments in exsecting the larynx of dogs and the author's own case detailed, in which Billroth performed the exsection for him upon the human subject.

There is a great deal to be learned from this book of Dr. Stoerk, the value of which is enhanced by the fact that it is based upon his own clinical experience. He has kept abreast of the best since the very announcement of laryngoscopy and in the very best place of all the world to study affections of the throat and adjoining passages, and we regret very much, as before intimated, that we have not been able to give his book that critical examination which our readers have a right to expect. It is possible that attention may be drawn to it again in a subsequent number of the ARCHIVES in connection with a long-expected work from a master-hand elsewhere. Meanwhile it is cordially commended with confidence to all interested in the subjects of which it treats. [J. S. C.]

Extirpation des Kehlkopfes. Von Dr. MAX SCHÜLLER. Deutsche Chirurgie, herausgegeben von Prof. Drs. Billroth und Luecke. Lieferung No. 37. Stuttgart. Enke, 1880.

Schüller's monograph is an excellent one. In the historical sketch he shows that the operation had been suggested from time to time by different surgeons, and that Albers, as early as 1829, published an account of some experiments on dogs made to determine the part played by the larynx in respiration. In two cases he even removed the whole larynx, but it must be emphasized that he drew no conclusions from his experiments as to the practicability of the operation on man. Full credit is then awarded to Czerny, who, by his experiments on dogs, not only made it seem plausible that the operation could be successfully performed on man, but also that an artificial larynx might be substituted for the one removed.

A brief account of all the operations published or known to the author (nineteen) are given, among which it is pleasant to see a successful one by Czerny himself. The operation has been done for sarcoma in three cases, for carcinoma in fifteen cases,

and for perichondritis (from unknown cause) in one case. All three of the patients operated on for sarcoma not only survived the operation, but have remained free from recurrence. Of the fifteen from whom the larynx was removed on account of carcinoma, five died of pneumonia, and two of exhaustion within two weeks after the operation. Five others died from recurrence of the disease long after the operation. Two patients (one operated on in Sept., 1877, by Wegner, and one in July, 1878, by Billroth) were alive at the time of writing, but there had been a recurrence of disease in the latter. Of one case there had been no late intelligence. The recurrence usually took place, not at the seat of the operation, but in the neighboring lymphatic glands.

Of prognosis in regard to function, Schüller says the operation offers everything desirable. It ensures not only free respiration through the mouth, but also a restoration of loud voice. It also removes difficulty in deglutition. The prognosis in regard to life and recurrence of the disease depends, as in the case of extirpation of any tumor, upon the nature of the growth and extent of the disease. In our present knowledge the prognosis is most favorable in the case of sarcoma. It cannot be denied that the operations so far do not offer much encouragement as to the final result in cases of carcinoma, but we must not forget that we are yet in the infancy of the operation, and that the disease was far advanced in most of the cases subjected to it. If extirpation is practiced earlier, as soon as the diagnosis is assured, the prognosis will become more favorable.

Schüller considers that complete removal of the larynx is indicated only in cases of malignant growth. It has been proposed also for organic stricture from inflammatory processes, in order to substitute a larynx which would perform its function for one which would not, but laryngotomy, with partial resection, suffices for these cases, and is far less dangerous ; moreover the preservation of a part even of the laryngeal walls renders the fitting of an artificial larynx easier. If the malignant growth is very circumscribed, removal by laryngotomy may be tried, but if thorough removal is impossible in this way, extirpation should be done at once. But laryngotomy should not be tried unless there is good reason to hope for success in this way, because extirpation is rendered more difficult by previous laryngotomy. Extirpation is especially indicated in the large, broad-based sarcomata, particu-

larly the soft sarcomata, which cannot be removed laryngoscopically.

In Chapter 3 is an excellent description, minute in details, of the method of operating. When the operation is carefully done, step by step as indicated, vessels being laid bare and tied at both ends before being cut, and every bleeding vessel secured at once, the loss of blood is inconsiderable, as all the cases which have been so managed show. S. recommends that tracheotomy be done several weeks before the extirpation. To prevent blood flowing into the air-passages, Trendelenburg's tampon-canula may be used, or the patient may be put in Rose's position (with the head hanging). S. favors the removal of the larynx from above downward, the trachea being divided last, after bleeding has been staunched; if the trachea is divided first and the operation done from below upward, although it may be quicker, there is much greater chance of annoyance and danger from blood getting into the trachea. S. recommends that as a rule, the epiglottis should be removed, as it is not necessary to deglutition, but interferes with the artificial larynx and may be the seat of a recurrence of the disease. On the other hand it is desirable to leave the lower part of the cricoid cartilage, if it is perfectly sound, as it facilitates the adaptation of the artificial larynx. After the removal of the larynx all suspected points must be touched with thermo- or galvano-cautery, which also may be very serviceable for touching little points still bleeding. Only when the whole wound appears clean and dry should it be finally cleansed with a carbolic solution.

The wound should be packed with carbolized dressings. It is not usually desirable to close the external wound with stitches unless there have been transverse incisions. Whether the walls of the pharynx will require stitches depends on the peculiarities of each case. It is better that the œsophageal tube, by which nourishment is conveyed to the stomach during recovery, should be introduced through the wound, and remain *in situ* for a few days at least. The dressing should be changed every day, the wound being washed out with carbolized water. The mouth should also be washed out several times a day with weak antiseptic, or alkaline solutions. An atomizer should be placed near the bed of the patient, and an antiseptic spray kept going night and day at first.

In regard to the adaptation of the artificial larynx, S. is decidedly opposed to introducing it at once as was done by Schmidt, but says, if the general condition of the patient is good, the larynx

canula without the vocal apparatus can begin to be introduced at the end of two or three weeks. This canula must be very carefully made for each case, just long enough but not too long. S. thinks that Gussenbauer's apparatus inclines backward too much, and consequently food and drink sometimes get into it. The more nearly the direction of the artificial larynx approaches that of the natural one with reference to the pharynx, the less of this difficulty there will be. Most of the patients, in whom the artificial larynx has been fitted have preferred to wear it without the vocal apparatus. With the latter there were various inconveniences, such as the monotony of the voice, the vibration during respiration and the difficulty of keeping it clean, and they could make themselves understood tolerably well without it. Two of the patients were said to use the vocal apparatus without difficulty. It is clearly a great gain for such patients to speak even for a few moments at a time in a clear sonorous voice, (the vocal apparatus can be attached at will, and a patient may amuse himself by having several reeds of different pitch, which he can use alternately), and it may properly be expected that future improvements will render its constant use possible. Several varieties have already been in use.

Convalescence after the extirpation of the larynx, judging from the cases reported, on the whole goes on not unfavorably, and seldom, but more frequently nevertheless, than after laryngotomy, is complicated by accidental diseases. Usually there was a little fever for a few days, sometimes none at all. Only once was there erysipelas, and this was in a case where disinfection was rendered difficult by closure of the external wound. Phlegmonous inflammation, burrowing of pus, etc., did not occur in any of the cases, In one case there was very likely septicæmia. The prognosis in regard to the possible occurrence of accidental lung affections is not so favorable. Five died from pneumonia, and one suffered from severe bronchitis. The best prophylaxis against these diseases consists partly in preparation for the operation, (tracheotomy some time before, alleviation of existing catarrh, and good nourishment), but especially in careful after-treatment. Above all things the entrance of particles of food, or secretions from the wound into the trachea must be prevented, and the air breathed must be carefully disinfected by sprays of carbolic acid, etc These sprays are also very useful after bronchitis or pneumonia has set in, to facilitate expectoration as well as to disinfect. Large

doses of digitalis and stimulants may be required. S. recommends very highly in acute or sub-acute lung affections of old people, the sub-cutaneous injection of camphorated oil three or four times a day. He warns against quinine, and says it may cause symptoms of collapse in old people. [F. I. K.]

Zur Aetiologie einfacher Kehlkopfgeschwüre und deren Verhaltniss zur Tuberkulose. Von Dr. MAX SCHOTTELIUS, Docent der pathologischen Anatomie. Cassel, 1880, Theodor Kay.

This forms the sixth dissertation in the eleventh volume of the Marburg series of essays on the natural sciences.

It consists of an attempt to attribute the production of simple laryngeal ulcers of the inter-arytenoidal region,—for it deals with no others—to attrition of folds of mucous membrane hypertrophied by exuberance of blood supply, consequent on excessive action of the inter-arytenoid muscle in forced contraction, as in coughing, and to the corroding influence of stagnant secretion pent up, either in the mucous membrane itself, or in the occluded depressions between the adjacent pairs of folds. These meso-arytenoid superficial ulcerations of the mucous membrane are regarded by the author as simple laryngeal ulcers, and are believed by him to be by no means of such infrequent occurrence as published observations would seem to indicate; an opinion which is confirmative of views long entertained by the writer of this notice, and expressed by him years ago in print. These ulcers, as demonstrated under the microscope, differ anatomically and histologically from the characteristic tuberculous ulcers of phthisis, and may be present in phthisical and otherwise deteriorated subjects, as well as in those not affected with a constitutional malady. Dr. Schottelius goes still further than the writer, and admits that even diffuse small round-cell infiltration at the base of such ulcerations, and in the adjacent interstitial connective tissue, may be incorrectly deemed tuberculous in the positive absence of tubercle, anatomically speaking, and render it questionable whether the individual had really been tuberculous or not.

Schottelius next discusses the theory of secondary development of tubercle as a result of the inhalation of various deleterious substances which produce primary inflammatory foci, and he justly claims that the general miliary tuberculosis induced by experi-

mental procedures upon animals, differs materially from the general miliary tuberculosis of the human subject. The pressure of tuberculous masses in the kidneys of dogs submitted to the experiments alluded to, is thrown out of serious consideration by the author, from the fact that similar products occur spontaneously in the kidneys of these animals. He also alludes to the fact that results similar to those induced by the forced inhalation of undoubted tuberculous matter, are produced when the animals are forced to inspire the products of sputa from cases of bronchitis, emphysema and bronchiectasia, in individuals who have been tolerably comfortable for prolonged periods. These and similar arguments render the belief plausible to the author that various causes may occasion similar anatomical changes; that all septic materials rank high in inducing the process, and that the difference in results is dependant upon the amount and mode of the infection.

Further and more acurate contributions from experimental researches are promised in the near future, the author contenting himself for the present with positive inclination toward the belief in self-infection of phthisical subjects from their own decomposed and septic secretions; a view which, we may add, is attracting a good deal of attention, and gaining revived credit for a theory of Louis long fallen into disrepute.

Transferring these arguments to the later developments of laryngeal ulcers, originally simple, it is apparent to the author that secondary changes are possible in various manners. Thus tuberculosis may become added to any simple laryngeal ulcer, as to simple phthisis in any of its stages, and tubercles may become deposited in the sub-epithelial portion of the mucous membrane in the neighborhood of the ulcer, or in the base of the ulcer itself; or septic infection of the superficial portions of the ulcer may occasion tuberculous nodules at a deeper portion, the etiology of which can be as little comprehended as that of the miliary tubercles found in the lung itself.

Finally, it is correctly stated that the clinical and anatomical features are both requisite for diagnosis in each individual case of tuberculosis; and that it is the province of pathology to determine, in the presence of various etiological possibilities, why one and not the others has exerted its influence in a given case.

Two admirable lithographs illustrate the microscopic appearances of the inter-arytenoid muscle, mucous membrane and glands,

in the normal state and in pulmonary phthisis; both from males twenty-two years of age, the former a suicide.

As already intimated, Schottelius, in this article, takes cognizance of inter-arytenoid ulceration only. It is to be hoped that he is extending his studies to intra-laryngeal ulceration generally. for there are many points in the larynx where ulceration cannot be accounted for in the mechanical manner which he claims as its origin in the meso-arytenoid fold. [J. S. C.]

Physiologie der Stimme und Sprache, von P. GRÜTZNER. Handbuch der Physiologie. Herausgegeben von Dr. L. HERMANN, Professor der Physiologie an der Universität Zürich. Erstes Band, Zweiter Theil.

Dr. Grützner has given us in 236 pages an excellent handbook of the physiology of the voice and speech. From the initial chapter on reed instruments in general, to the closing ones on speech, with their accounts of the telephone and and phonograph, the work shows a thorough digestion of everything, old and new, which pertains to the subject.

Although much still remains obscure in regard to the physiology of the voice, there has been a great gain in our knowledge since the discovery of the laryngoscope, not merely through the inspection of the normal larynx in action, but from the clinical study of morbid conditions of the organ. In the study of articulate speech also, much advance has been made by the labors of Helmholtz and others, so that a monograph on these subjects today is a very different thing from that of twenty or even of ten years ago. We cannot too strongly commend this treatise as one bringing up to date the subjects treated of, in a most thorough, yet condensed form. [F. I. K.]

Sore Throat. Its nature, varieties and treatment. By PROSSER JAMES, M.D., Lecturer on Materia Medica and Therapeutics at the London Hospital, Physician to the Hospital for Diseases of the Throat and Chest, etc. Fourth edition, with plates. 8vo, p. 336. London, Churchill, 1879.

The fourth edition of Dr. James' well-known essay upon the subject of sore throat has recently appeared. A glance through its pages proves that the author is no idler, and that he has shown commendable energy and a proper appreciation of the duties which his position as a writer entail, by keeping his work well up to the standard in all its departments.

Alterations for the better in the arrangement have been made, many passages properly condensed, and more expanded, several sections inserted, *e.g.*, that on "stammering of the vocal cords," a subject in connection with which Dr. James' name is now well and favorably known. Fresh paragraphs have been interspersed through the work, and, finally, four new chapters on syphilitic sore throat, affections of the naso-pharynx and of the œsophagus, and one on the connection of sore throat with affections of the nose and ears, have been added.

In its present shape then, the work justifies the commendations which have been bestowed upon it, and though, in many points still incomplete, and in still others open to fair criticism, can be recommended to all practitioners. [G. M. L.]

QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

LARYNX.

1. Adam. Acute laryngitis from sulphuric acid, tracheotomy, recovery; Case. *Monatssch. für Ohrenheilkunde.* No. 1, 1880.

2. Beregszászy. On herpes laryngis. *Wiener Med. Presse*, 1879, xx, 1399–1401.

3. Boeckel. Adhesion of the vocal cords after tracheotomy. *Lancet*, Dec. 27, 1879.

4. Brault. Xanthelasma of the larynx, trachea and bronchi, in a case of hydatid cyst of the liver. *Phila. Med. Times*, No. 319, 1880.

5. Day. Laryngismus Stridulus. *Med. Press and Circular*, Feb. 4, 1880, Feb. 11.

6. Durant. Hygiene of the voice. New York, 8vo, p. 189. 1879.

7. Fieber. The care and hygiene of the voice, etc. Wien, 1880. 8vo.

8. Fourbin. Laryngeal paralysis following an injury to the spinal nerve. *Ann. des Mal. de l'oreille et du Larynx*, No. 6, 1879.

9. Gerhardt. Hysterical paralysis of the vocal cords. *Tüb. Corr. Blatt.*, t. 1, 1878.

10. Glasgow. A few suggestions on anæsthesia of the larynx. *St. Louis Med. and Surg. Journal*, Dec., 1879.

11. Gross. I. Irritative cough from elongated uvula; Case. II. Progressive dyspnœa and aphonia. Stenosis of glottis caused by intra-laryngeal growths; tracheotomy; Case. *The Jefferson Med. College and Clinical Record*, Phila., Jan., 1880.

12. Hall. A case of œdema glottidis. *Lancet*, Dec. 27, 1879.

13. Hartman. On laryngeal hemorrhage. *St. Louis Med. and Surg. Journal*, Dec., 1879.

14. Hyde. A case of leprosy. Examination of the larynx, with drawing. *Chicago Med. Jour. and Ex.*, Dec., 1879.

15. Isenschmid. A new manakin for laryngoscopic demonstrations. *Corr. Bl. für Schweizer Aerzte*, No. 6, 1879.

16. James. Sore throat. 4th edition. London, 1879.

17. Jensen. Polypus of the Larynx in a colt. *Tidsskr. f. vet. Kiφbeuh*, 1879, ix, 22.

18. Josias. Œdema of the glottis, consecutive to a cervical phlegmonous adenoma in an infant of 16 months; tracheotomy; Cure. *La France Med.*, Sep. 14, 1879.

19. Jurasz. A case of paralysis of the posterior crïco-arytænoid muscles, following whooping cough. *Jahrbuch für Kinderheilkunde*, Bd. xiv, heft iii, 1879.

20. Kapff. On the extirpation of the larynx. Thesis. Tübingen, 8vo. 1879.

21. Koch. Clinical remarks on paralysis of the posterior crico-arytænoid muscles. *Ann. des Mal. de l'oreille et du Larynx*, No. 6, 1879.

22. Lamallerée. Syphilitic laryngitis. *Thèse de Paris*, Jan., 1880.

23. Lamallerée. On *tic laryngo-facial*. *Ann. des Mal. de l'oreille et du larynx*, No. 6, 1879.

24. Langenbuch. Laryngotomia sub-hyoidea, vera, s. sub-epiglottica. *Berlin Klin. Wochensch.*, No. 5, 1880.

25. Massei. On laryngeal neoplasms. *La Scuola Méd. Napolitanea*, fasc ix, x, 367, 1879.

26. Michael. Chronic laryngeal diseases in children, following acute infectious diseases. *Deut. Archiv für Klin. Med.*, 1879, xxiv, 618.

27. Michaux. Œdema of the glosso-epiglottic folds in a case of diphtheritic laryngitis. *Le Progrès Méd.*, vii, 670, 1879.

28. Poore. Syphilitic disease of the tongue and larynx; partial improvement under iodide of potassium; marked improvement under mercury; Case. *Lancet*, Jan. 25, 1880.

29. Poore. Syphilitic disease of the larynx and lungs of long standing; great emaciation; rapid improvement under iodide of potassium. Remarks. Cure. *Lancet*, Jan. 10, 1879.

30. Robertson. Bursal cysts of the thyroid cartilage pressing upon the larynx. Operation. *Toledo Med. and Surg. Journal*, iii, 385, 1879.

31. Rossbach. A new sub-cutaneous method of operating for the removal of intra-laryngeal growths. *Berlin Klin. Wochensch.*, No. 5, 1880.

32. Sands. Cancer of the larynx; successful removal by thyrotomy; malignant disease of the supra-renal capsule, kidney and ureter. Case. *N. Y. Med. Record*, Jan. 10, 1880.

33. SCHOTTLIUS. On the ætiology of simple laryngeal ulcer, and its relation to tuberculosis. Cassel, 8vo, 1880.

34. SCHRÖTTER. On the laryngoscopic and rhinoscopic examination in children. *Monatssch. für Ohrenheilkunde.* No. 11, 1879.

35. SCHRÖTTER. Laryngeal chorea. *All Wiener Med. Zeitung.* No. 7, 1879.

36. SCHÜLLER. Tracheotomy, laryngotomy and extirpation of the larynx. *Lieferung.* No. 37. *Deutsche Chirurgie.* Billroth and Luecke. Stuttgardt, 1880.

37. SEILER. Intra-laryngeal growth. *Phila. Med. Times.* No. 318, 1880.

38. SÉMON. Congenital syphilis of the larynx. Cases. *The Lancet*, Feb. 7. 1880.

39. SÉMON. The treatment of acute and chronic catarrhal laryngitis, with some remarks on the use of the laryngoscope. *Brit. Med. Jour.* No. 995, 1880.

40. STÖRK. Laryngeal stenosis. *Wiener Med. Wochensch.* No. 46, 1879.

41. STÖRK. Clinic for diseases of the larynx, nose and pharynx. 2d part. *Enke.* Stuttgardt, 1880.

42. URBINO. Bilateral paralysis of the posterior crico-arytenoid muscles, tracheotomy. Case. *Lo Sperimentale*, Fasc. 12, Dec., 1879.

43. WAGNER. A case of laryngeal hæmorrhage. *St. Louis Med. and Surg. Journal*, Dec., 1879.

44. ZIT. On laryngitis exsudativa. *Jahrbuch für Kinderheilkunde.* Sept. 25, 1879.

2. Herpes Laryngis. B. makes three cases which he has observed in Schnitzler's clinic serve as the text for some remarks upon this rare affection. Herpes of the pharynx has been long known and recognized, but few cases of herpes of the larynx are upon record ; this rarity may depend upon a paucity of investigation. Herpes of the larynx presents no differences either in pathology or ætiology from the like affection in the pharynx ; it appears upon the epiglottis, the vocal cords and the general mucous membrane of the larynx in the form of little exudations, seated upon an inflamed base, which 1–2 days later change to vesicles, and finally disappear, leaving a small erosion or ulceration, which, in turn, heals over in a few days, even without treatment. The vesicles do not all appear at the same period, and in a given case may be observed in all stages of development at the time of one examination. Vesicles upon the tongue, lips and in the pharynx will occur concomitantly. During this process, the epiglottis will be more or less swollen and reddened, and the vocal cords, dependent upon the number of the vesicles, markedly or slightly in-

jected and thickened. The subjective symptoms are not marked. B. insists on the diagnostic interest of this class of case, and the danger of confounding it with other affections of the parts, specially syphilis, as shown by Meyer, and diphtheritis, as was done in a case reported by Schnitzler.

3. Adhesion of the vocal cords after tracheotomy. Boeckel showed, at a recent meeting of the Société de Médecine of Strasburg, the larynx of a child on whom tracheotomy had been performed for diphtheria. The patient recovered, but it was impossible to withdraw the canula, suffocation being threatened on every attempt to do so. Some months later the child died of scarlatina. The pathological specimen showed that there was an adhesion of the two vocal cords in their entire extent except at one point, where an opening remained scarcely admitting the point of a probe. Dr. Boeckel believed that the union of the vocal cords was due to the agglutination of the abraded surfaces after the elimination of the pseudo-membranes.

4. Xanthelasma of larynx, trachea and bronchi in a case of Hydatid cyst of the liver. At a recent meeting of the Société Anatomique. M. Brault showed specimens from the autopsy of a case of Hydatid cyst of the liver, where xanthelasma had been observed during life. Striæ of xanthelasmic tissue were found in the mucous membrane of the air passages in addition to those observed on the skin.

10. Anæsthesia of the Larynx. *Conclusions:* 1st. Carbolic acid in strong solutions produces anæsthesia of the larnyx and relieves pain. The application causes an intense burning, which lasts about twenty seconds; the anæsthetic condition continues about two hours.

2d. The hydrate of chloral in strong solution applied to the mucous membrane produces anæsthesia. The application causes a severe burning pain, lasting over a minute; the anæsthesia does not continue longer than one-half hour.

3d. The strength of the solution necessary to produce anæsthesia varies somewhat in different persons.

4th. It is recommended that the weaker solution be applied first, and this can be followed by the stronger solution. The first application is the only one causing pain.

5th. No bad results, either constitutional or local, have followed the application of strong solutions of carbolic acid.

13. Laryngeal Hemorrhage. Mr. L., aged 32, a strong, robust man, had a sudden filling up of his throat, a sense of choking, and expectorated from two to three ounces of pure, bright red blood, the hemorrhage recurring the next morning.

There was no history of pulmonary disease or previous throat trouble. On careful examination, his chest revealed no abnormal condition of the lungs or heart. Inspection of the mouth, gums, pharynx, naso-pharynx and nasal cavities showed no bleeding points, the parts to all appearance seeming perfectly healthy.

Attention being next directed to the larynx and an examination of the same being made, the source of the hemorrhage was readily seen to be a largely ruptured capillary vessel, upon the upper surface, about the middle of the left ventricular band.

That infraction of a blood vessel may frequently be the cause of rupture and hemorrhage from the same is well known, and further that capillaries may also be the seat of fatty degeneration, the epithelial cells being destroyed in the process and the walls so much damaged that rupture is often the ultimate result. It is more than probable that either one or the other of these pathological changes, was the primary cause of the hemorrhage in the above case.

19. Paralysis of the Abductor Muscles of the Glottis following Whooping-cough. The diagnosis in this case is at best, a very doubtful one, no laryngoscopic examination, although the attempt was often made, could be satisfactorily effected, in the two year old patient. The dyspnœa and other symptoms pointing to laryngeal stenosis, were at first relieved by the electric current and then relapsed. The account of the case is left incomplete.

21. Paralysis of the Crico-Arytenoidei Postici. Clinical considerations upon. In Koch's somewhat lengthy article, he proves that paralysis of the muscles is, in a large proportion of cases, due to central causes. After giving a most elaborate exposition of the symptoms common in this form of paralysis he sums up the medical resources as follows: Eliminating hysterical causes, paralysis of central origin is generally incurable. The life of the patient may be prolonged by tracheotomy, but he will as a rule have to wear the canula through life. Subcutaneous injections of sulphate of strychnia, massage, and laryngeal gymnastics are almost always ineffectual.

24. Laryngotomia Sub-hyoidea vera. S. Sub-epiglottica. Langenbuch reports a case of laryngeal polypus in the anterior commissure of the larynx, which was overhung by the epiglottis, in such a manner that it could hardly be seen, still less operated upon by the mouth, and which he removed by an operation for which he proposes the above name. It is as follows, transverse incision through the skin, separation of muscles from the hyoid bone, division transversely, just above the upper edge of the thyroid cartilage of the hyo-thyroid membrane; then a vertical incision extending through the ligamentous tissue in the thyroid notch and upper third of the cartilage (though perhaps this last through the thyroid cartilage is unnecessary) and transverse division of the base of the epiglottis.

The larnyx is now drawn forward and downward with hooks so that it can easily be looked into. In the above case, the tumor and its point of insertion were easily seen and as easily removed. Speedy recovery followed.

26. Chronic laryngeal affections in children the result of acute infectious diseases. In the majority of cases

of acute infectious disease in children, Michael tells us the larynx is more or less implicated. In some the disease is here localized (diphtheria, croup and whooping-cough), in others several organs participate (measels, scarlet fever and variola), and in still a third class typhoid gives rise, under exceptional circumstances, to laryngeal complications.

That the local disease may, especially when it occurs in typhoid fever, have a destructive tendency, cause irreparable organic changes, interfere with the functional duties, cause anchylosis and stenosis, is a fact which is well known, that the local complication in the larynx may persist, for a long time, after the subsidence of the general disease is, not so well understood ; and that chronic disease, interfering materially not only with the voice, but likewise with the general health of the patient, even preventing the *restitutio in integrum* for months, years, or entirely, may remain long after the primary affection has disappeared. Since Michael's attention has been directed to this fact he has seen a large number of obstinate, but uncomplicated chronic laryngeal and tracheal catarrhs, as sequillæ of pneumonia, whooping-cough, variola, diphtheria and the like, and wonders that these diseases are not included in the ætiology of catarrhs of the air passages in works upon the subject.

These simple catarrhs differ in many cases, in no respect from other chronic catarrhs, marked reddening and swelling of the laryngeal and tracheal mucous membrane with uninvolved, save slight hyperæmia, vocal cords, are the characteristics. The symptoms are cough, especially in the evening, and slight hoarseness. Pencillings with iodine in glycerine or tannin cause, in a short time, their disappearance.

Exacerbations and recurrences are, however, not infrequent, and are usually caused by exposure.

The paper contains the interesting histories of a number of cases, which bear out and illustrate the foregoing remarks.

30. Bursal Cysts of the Thyroid Cartilage pressing upon the Larynx. Operation. Cure. Patient æt. 19, male, presented many of the symptoms of phthisis with laryngeal complications in the advanced stages. Laryngoscopic examination revealed the epiglottis and the upper portion of the larynx pushed to one side. This displacement was evidently due to pressure from without. The thyroid cartilage was observed to be very prominent, and this was found on examination to be due to cystic degeneration of the thyroid bursa. The larynx aside from its abnormal position was apparently healthy. Operative interference seeming indicated, an attempt was made to extirpate the cyst entire. It was so adherent to the anterior surface of the cartilage, however, that the sac was simply cut away with scissors and the internal wall of the cyst destroyed. A week after the operation the larynx had returned to its normal position, deglutition and respiration were normal and the voice greatly improved. These cysts are true " Hygromata (see on the

same subject an article published in Berlin, 1855, 'Ueber die Cysten-geschwülste des Halses.' ")

31. A new sub-cutaneous method of removing intra-laryngeal growths. Rosbach says that after many experiments upon animals, he has devised an operation, as above, which is as easy as the egg of Columbus, one without difficulty or unpleasant results ; one that supersedes the necessity of thyrotomy or intra-laryngeal means, without pain and easily and quickly done ; an operation which requires no preliminary training of the patient ; leaves but a small punctured wound ; needs no after treatment and demands only that the physician can use the laryngoscope and that the patient can tolerate the mirror in his throat. After this enthusiastic commendation, he proceeds to give us the details of his method. The patient is seated in the ordinary laryngoscopic position and holds his own tongue—the operator holds the mirror in his left hand or fixes it in a stative apparatus. In his right he has a small lancet or spear-shaped knife, fixed upon a long shank, which he thrusts below the lower angle of the thyroid notch, through the *lamina mediana* of the cartilage in the median line, directly backward into the larynx ; there is no bleeding. The point of the knife now appears in the larynx at the lower third of the epiglottis, and is given such a direction as to reach the location of the growth, which may now be punctured, incised or cut away.

The patient experiences no pain aside from that caused in the puncture of the skin ; has no sensation of the knife entering the larynx ; no cough and makes no efforts at deglutition.

The external puncture is made as a rule, 1–5, mm. below the thyroid incisure so that the point of the knife lies a little above the level of the vocal cords. If we desire to operate below the vocal cords it must be made deeper, even through the crico-thyroid membrane.

The method has been tried upon two patients. In one a cyst, lying in the anterior commissure of the larynx below the mucous membrane was opened, and in the other a polypoid tumor of the left vocal cord removed at the first sitting. Many and varied experiments have been made upon animals. Rosbach believes that this method of operating will be found efficient not only in those cases where intra-laryngeal means have failed and where the patient will not consent to a thyrotomy, but likewise in the majority of laryngeal cases requiring operation and that here it will be proven superior to the common intra-laryngeal procedures, requiring, as it does, a shorter time and being much more comfortable for the patient.

It may be said here that the procedure described by Rosbach is essentially the same as that devised, some time since, by Eysell of Halle, the latter passing his needle through the crico-thyroid membrane, and is therefore not new.

32. Cancer of the Larynx. Successful removal. Recurrence 22 months later in supra-renal capsules. The case is of peculiar interest from the fact that it is the only one out of nineteen instances mentioned by Bruns in which there was no recurrence of the disease in the larynx after its removal by thyrotomy.

33. See a short review of Schottlius' work elsewhere in this journal.

34. Laryngoscopy and Rhinoscopy in children. Schroetter holds that it is a mistake for physicians to declare that a laryngoscopic examination, and specially a rhinoscopic, are impossible in children or that they can be made only under exceptional circumstances. He has proved, he claims, the contrary, and shown that they may be examined as easily as adults. The real difficulty lies, not in the age of the child, but upon anatomical grounds. In them the epiglottis is much more depressed than in adults and compressed at its sides. Again children cannot and do not understand the purpose of the examination and render but little assistance to the operator, nor will they intone the necessary vocal sound "e" as quickly or flatten the tongue and the like as well. All these difficulties may, however, be overcome, mainly by holding the head of the child backward and standing during the examination. A high "e" if it now be intoned or a deep inspiration will allow of a good view of the interior of the larynx. Children of two or three years of age can be examined, and S. has even accomplished his purpose in an infant of six months. Rhinoscopy is more difficult, but still not impossible, and if more frequently performed, the fact that a medium grade of hypertrophy of the pharyngeal tonsil is no uncommon occurrence, will be more generally recognized than at present. Hypertrophy of the tonsils, also, will come to be regarded in a different light. S. formerly extirpated many more tonsils than he now does, believing that all hypertrophied glands needed excision. He has since learned otherwise, and that such tonsils may remain stationary in respect to growth, while the surrounding pharyngeal parts increase, the relative size finally assuming such a disproportion that they cause no further trouble by their presence. He excludes, of course, extreme hypertrophy and tonsils in which recurrent inflammatory attacks constantly occur.

35. Laryngeal Chorea. The prominent symptom of the disease, is a cough over which the patient has no control and which is totally different from that observed in other affections of the air passages: the cough may be either of a barking, howling or crowing character. In certain cases of hysteria, such a cough may occur, and it is occasionally simulated, and in many it cannot be traced to either of these causes.

Schrötter himself has had eleven cases. They were all young persons, generally from 8 to 14 years of age, in whom, without known exciting cause or any other disease, attacks of coughing

frequently occurred. The attacks came on every five or ten minutes when the patient was awake, and disappeared during sleep.

He proposes to call the affection *laryngeal chorea—chorea*, because the spasmodic contraction of certain muscles or groups of muscles occurs during the waking movements of the patient and disappears during sleep; furthermore, the patient has no control over the attacks. *Laryngeal* because the most prominent symptoms have their seat in the larynx. Other groups of muscles in no way connected with phonation and respiration, are occasionally affected.

That the affection is a form of chorea is rendered further probable by the mimicry, the relapses, the course of the disease, and the occurrence of other nervous affections in the same individual, or in members of the family.

Schrötter thinks the affection a motor neurosis in the strictest sense of the term; but whether it has its origin in the central nervous system, he considers a matter of speculation only. The prognosis is favorable—all of his cases have recovered in from three to six weeks.

Relapses occurred, but they were always less severe than the original disease.

The treatment consisted in cold shower baths two or three times a day, the administration of quinine in large doses, and the application of the constant current.

Iron was given to the anæmic patients.

36. See an abstract of Schüller's excellent article on "Extirpation of the Larynx," elsewhere in this journal.

37. Intra-laryngeal growth. Seiler gives the full and interesting details of a case of intra-laryngeal growth which he has lately successfully treated.

When it is stated that during the course of this treatment, a tracheotomy, incision of an external abscess, laryngotomy and finally an operation for cicatrical stenosis of the trachea, were in turn found necessary, the difficulties with which the case were surrounded, will be seen. For the details the reader is referred to the original article.

38. Congenital syphilis of the Larynx. Dr. F. Sémon exhibited at the London Pathological Society the Larynges of two brothers, both affected by Congenital Syphilis. There was abundant evidence of syphilis in the parents, and both children, in addition to other syphilitic affections, suffered from laryngeal trouble from the age of one month, dyspnœa being very marked. There was ulceration about the lips, mouth, and pharynx; laryngoscopic examination was very difficult and imperfect. Treatment was conducted irregularly. On January 10th, the eldest child died, after exacerbation of the dyspnœa for five days. There was great chronic thickening of the upper aperture of the larynx, with only subordinate ulceration; and it was from the aggravation of this chronic process, rather than from acute œdema, that death ensued. The younger child died within three

weeks from acute œdema of the middle compartment of the larynx, which was completely occluded, the upper aperture of the larynx being almost free. Deep lesions of the larynx are very rare in congenital syphilis; and simple chronic thickening of the parts, very rare in adults, have not been observed before in children. It was remarkable that syphilis should have attacked the larynx especially, in these two brothers, and remarkable that each should have fallen a victim to acute œdema.

39. The treatment of acute and chronic catarrhal laryngitis. For the majority of cases of acute catarrhal laryngitis in adults the treatment recommended is an extremely simple one,—(confinement in a warm atmosphere, the use of warm steam inhalations, antiphlogistics, and complete rest of the voice), and fully in accordance with the general principles of the treatment of acute inflammation. On the other hand, in accordance with these principles, Sémon considers it a duty to warn earnestly against a premature local application of astringents. Scholars in laryngoscopy often connect the laryngoscopic appearance of congestion of the parts with the idea of making astringent applications. This is a fatal error. No surgeon would dream of treating a recent external inflammation with astringents, which in this stage are only likely to increase the intensity of the inflammation. The same rules, which are to be applied to other parts, must also govern the treatment of laryngeal affections; this cannot be too often repeated, and thus the premature use of astringent remedies is to be considered as a decided fault. The local treatment only comes into play when, in consequence of general neglect, newly acquired colds, feeble constitution, predisposition for diseases of the respiratory mucous membranes, undue talking and singing, the acute inflammation, instead of ending in resolution, passes into a more subacute, or directly into the chronic form.

In the treatment of chronic inflammation we intend to produce a reactive inflammation and to watch its course. For this purpose, the local application of astringent solutions is necessary, the strength of which must of course vary according to the degree of the pathological changes and to the duration of the disease. In all older and more severe cases, Sémon gives in common with almost all authorities, the preference to solutions of nitrate of silver. This remedy has, in his hands, acted better than anything else. Solutions of 16, 24, 48, 96, 240 grains to the ounce, or, in very old and obstinate cases, even the solid stick, may be used. It is, however, advisable in every case to begin with milder solutions, and only gradually to pass on to the strength which is deemed necessary in the individual case. The applications should be made daily in increasing strength, and of course with the guidance of the mirror, until a lively reactive inflammation is produced. Then gradually at longer intervals weaker solutions must be applied, according to the individual case.

Whilst a great improvement is generally to be observed, even in very old cases, soon after the beginning of the treatment, it is often very difficult to remove the last traces of the thickening and of the chronic congestion. In this stage, it is well to combine the astringent treatment with the use of electricity in both its forms—the constant and the faradic. The employment of the electric current is of the highest value, especially in those cases in which the impairment of the mobility of the vocal cords is present. In these cases, it is sometimes necessary to apply it in both forms directly to the affected parts by means of Dr. Mackenzie's laryngeal electrode; but in the majority of cases, the external application of the constant current to the sides of the larynx is sufficient. In more recent and less severe cases, other astringents, such as perchloride of iron, chloride of zinc, tannin, alum, etc., might be used instead of the nitrate of silver; for instance, in cases of subacute laryngitis, the application of a solution of chloride of zinc (fifteen to thirty grains to the ounce) will be found quite sufficient. If, on the other hand, the hyperplastic process should already have resulted in the production of a well defined neoplasm, an astringent treatment is perfectly useless; the attempt to treat it by caustics is even injurious to the neighboring parts, and the case belongs to the sphere of surgical interference.

40. Laryngeal stenosis. Stoerk communicates the history of a case of cicatrical closure of the larynx following diphtheria, in which he performed a *laryngotomia interna* and removed the adventitious tissue, employing later, an apparatus for dilatation of the stricture from the tracheotomy wound, which he has devised and which is pictured in the original article: the case is introduced simply to serve, apparently, as a text for remarks upon this instrument, and another for operating, which the peculiarities of the particular case called for.

41. The second part of Stoerk's work in diseases of the throat long delayed, has just appeared and is noticed elsewhere in this journal.

PHARYNX.

1. Beeck. On follicular angina. *Ann. in Nord. Med. Archiv*, Bd. ix, No. 18, 1879.

2. Billroth. I. Enormous cicatricial stricture of the pharynx, following syphilis. Case. II. Tuberculous infiltration of the upper part of the larynx; operation. Case. *Chir. Klin.*, Wien, 1871–6.

3. Boeckel. Extirpation of a retro-pharyngeal goitre. *La France Med.*, April 12, 1879.

4. Casselli. Removal of a granuloma (*sic*) infiltrating the larynx, pharynx, palate and tonsil. *Raccogliotore Med.*, Ser. iv, Vol. xii, No. 11, 1879. *See also* L. de Sanctis, *Il Morgagni*, No. ix, 660, 1879.

5. Corradi. Sub-mucous fibroma of the pharynx. Case. *Lo Sperimentale*, April, 1879.

6. Frühwald. Polypus of the right tonsil. *Monatssch für Ohrenheilkunde*, Dec. 1879.

7. König. Diseases of the lower pharynx and œsophagus. Lieferung No. 35. Billroth und Luecke. *Deutsche Chirurgie*, Stuttgardt, 1880.

8. Kormann. On lymph-adenitis retro-pharyngeal in children. *Centralzt. für Kinderheilkunde*, Bd. iv, 67, 1879.

9. Marduel. Article. Pharynx. *N. dict. de Méd. et de Chir. prat.* Paris, 1879, xxvii, 106–120.

10. Pierm. On epithelioma of the tonsil. Thèse de Paris, 1879.

11. Revillont. On scrofulous ulcerations of the pharynx and tongue. *Gaz. des Hôpitaux*, July 5, 1879.

12. Verneuil. On the diagnosis of Epithelioma of the pharynx. *Jour. des Connaissances Méd.*, June 5, 1879.

13. Vibert. Fibrous tumor of the pharynx. Case. *Bull. Soc. de Chir. de Paris*, t. v, 615. 1879.

3. Extirpation of a retro-pharyngeal goitre. M. Bœckel reports the case of a woman, aged 25 years, who applied to him in November, 1878, for the relief of a voluminous tumor in the right side of the neck, and of a second tumor situated behind the pharynx.

A cyst of the thyroid gland was diagnosed and evacuated, but the retro-pharyngeal tumor was not affected by the operation. As the cyst soon filled again, a radical operation was performed in December. An incision, four and a half inches long, was made along the anterior border of the sterno-mastoid muscle under the carbolic spray, and the cyst was punctured with a bistoury, drawn out and removed. Ten ligatures were required to control the hemorrhage.

The retro-pharyngeal tumor was removed with the large cyst, and was found to be a cyst connected, but not communicating with the larger one. M. Recklinghausen, who examined the cysts, believed that they were formed at the expense of the thyroid tissue. In January the wound had closed completely, and the patient was discharged.

6. Polypus of the right tonsil. In a patient of 43, a pedunculated polypus the size of a normal tonsil was attached to the upper part of the hypertrophied gland. In certain positions of the patient it caused suffocative attacks. Cut away with scissors. Microscopic examination showed it to have a structure similar to that of a hypertrophied tonsil.

10. Epithelioma of the tonsil. A case operated upon by Pierm some three years since (without recurrence to date) by lateral section of the inferior maxilla, after the method of Langenbeck. The sutures through the bone (silver) caused necrosis, and were of necessity replaced by gutta-percha threads, as advised by Genzmer.

NARES AND UPPER PHARYNX.

1. Allen. On a new method of treating chronic nasal catarrh. *Am. Jour. Med. Sci.*, Jan., 1880.

2. Allen. Errors of conformation of the nasal chambers studied in relation to the cause of nasal disease and irregularity of the teeth. *Phila. Med. Times.* No. 314, 1879.

3. Baginski. Operations in the nasal cavities. *Sovrem Med.*, Warsaw, 1879, xx, 307.

4. Barthelmy. Injections of chloride of zinc in nasal polypi. *Phila. Med. Times.* No. 318, 1880.

5. Bensch. On the surgical treatment of naso-pharyngeal polypi. *Schmidt Jahrbücher.* Bd. 183, No. 3.

6. Blackwell. Contagiousness of post-nasal catarrh. *N. Y. Med. Record*, Jan. 10' 1880.

7. Fischer. An irrigator for the nose. Buda-Pest, 1879. *Wilckens*, 7 p., 8°.

8. Goodwillie. Hinderance to the respiration by disease in the nose. *Canada Med. Record*, Dec. 1879.

9. Gottstein. On the pathology and therapeutics of Ozæna. *Breslau Aertzl. Zeitschr.*, 1879, i, 169.

10. Hartmann. On operations on nasal polypi. *Schmidt Jahrbücher.* Bd. 183, No. 3.

11. Herrera. A case of naso-pharyngeal polypi. *Escuela de Méd.*, Mexico, 1879, i, No. 7, 8.

12. Herteux. Naso-pharyngeal chondroma. *Phila. Med. Times*, Jan. 17, 1880.

13. Hutchinson. Severe Epistaxis treated by hot foot baths. Case. *Med. Times and Gaz.*, 1879, ii, 689.

14. Lange. On Weber's douche. *Ugesk. f. Laeger Kjobenh*, xxviii, 457, 1879.

15. Michaux. Résumes of the treatment of fibrous naso-pharyngeal polypi. *Bull. de l'acad. de Méd. du Belg.*, iii, No. 4, 1879.

16. Miller. The treatment of mucous polypus of the nose. *Brit. Med. Jour.*, Dec. 13, 1879.

17. Nixon. A large number of polypi (fibro-myxomas), obstructing the nostrils. Case. *Med. Press and Circular.* 1879, xxviii, 305.

18. Noll. On the treatment of naso-pharyngeal polypi by temporary resection of the upper jaw. *Brochure*, Tübingen. Fues. 8°, 1879.

19. Perier. Coryza caséux. *Bull. et mém. Soc. de Chir. de Paris*, 1879, u. s. v, 779.

20. Richet. On exostoses of the nasal septum. *Schmidt Jahrbücher.* Bd. 184, No. 11, 1879.

21. Rodgers. Treatment of post nasal catarrh. *Brit. Med. Jour.*, No. 994, 1880.

22. Shurley. The galvano-cautery as a therapeutical measure in chronic nasal and naso-pharyngeal catarrh. *St. Louis Med. and Surg. Jour.*, 1879.

23. Spear. A new method of plugging the posterior nares. *Med. and Surg. Rep.*, Phila., 1879, xli, 416.

24. Trautmann. On diseases of the nose, affecting the ears. *Arch. für Ohrenheilk.*, 1879–80, xv, 91.

25. Weil. Naso-pharyngeal polypi, écrasement and osteoplastic operation; rapid recovery. Case. *Lancet*, 1879, ii, 835.

26. Winslow. Some cases of epistaxis, etc. *Maryland Med. Jour.*, 1879–80, vi, 91.

27. Wolfram. On the treatment of catarrh of the Antrum of Highmore. *Schmidt Jahrbücher*. Bd. 183, No. 3.

28. Zaufal. A contribution to the operation for naso-pharyngeal polypi, through the assistance of anterior rhinoscopy. *Schmidt Jahrbücher*. Bd. 183. No. 3.

29. Zuckerkandl. On the normal and pathological anatomy of the nares and neighboring cavities. *All. Wiener Med. Zeitung*, No. 51, 1879.

1. On a new method of treating chronic nasal catarrh. In Prof. Allen's exceedingly valuable paper, he states that the cause of an important group of cases of nasal catarrh is due to obstruction of the nares. The nasal chamber being a modified portion of the respiratory tract, it follows that its functional integrity is dependent upon the freedom with which a current of air can pass through it. Obstruction is fatal to its efficiency: for, not only is the sense of smelling lost, but the unconscious effort to breathe through the nose ordinarily causes congestion and distress, and at all times the normal outflow and distribution of mucus is interfered with. Nasal mucus has a tendency to flow backward. The gentle inclination of the floor of the nose from before backward, and the dip of the turbinated bones determine this. Nasal obstruction interrupts this flow, and causes accumulation and subsequent inspissation of mucus, or a reversal of the current, which results in escape of the secretion of the nostril. If it is conceded that these statements are correct, all that becomes necessary to make their application to chronic nasal catarrh is to demonstrate the existence of obstruction in that affection. The details of the treatment of this obstruction are full, novel and interesting.

2. Errors of conformation of the nasal chambers studied in relation to the cause of nasal disease and irregularity of the teeth. Dr. Allen traces in his article the plan of the normal facial development, and contrasts it with the results of departure therefrom. Instances of congenital fistulæ of

the neck, of depressions or clefts in or about the auricles, and of dermoid cysts of the face, he thinks traceable to imperfect closure of the spaces between the visceral arches of the embryo. He has likewise recognized a well-defined group of cases in which the nasal chambers remained from birth partially occluded. He also calls attention to the deformities of the nasal cavities likely to occur in children between the ages of seven and eighteen, which probably give rise to the nasal catarrh so common at that time of life.

4 5. **Injections of chloride of zinc in naso-pharyngeal polypi.** Barthelmy reports a case of naso-pharyngeal polypus in a child of 14, who suffered at the same time from excessive epistaxis. Nine times in the course of two months he injected five drops of a saturated solution (?) of chloride of zinc into the parenchyma of the tumors, with the result of their entire absortion. Six months afterward there were signs of recurrence.

5. **On naso-pharyngeal polypi.** Bensch deals alone with the simple hard, fibrous polypus, which springs from the base of the skull. After speaking of their symptomatology, duration and appearances, he gives his views in full as to ætiology, passing thence to the subject of treatment. The older methods are dismissed in a few words, and their unsuitability strongly commented upon. On the other hand, B. regards the rhinoscopic methods of Voltolini as an immense step in advance.

This rhinoscopic surgical method allows of a radical procedure without any preliminary operation, aside from the controlling of the velum, is without pain, or the danger of blood passing into air tubes, which is associated with anæsthesia, with certain guarantee of cure and freedom from recurrence, all by the natural passages, through nose and mouth. The procedure consists of two acts, performed at the same time or with an interval: first, preliminary extirpation of the polyp, and, second, destruction of its base, under the guidance of the rhinoscopic mirror. The details of both are given in Bensch's excellent work, which closes with a table of 122 cases of naso-pharyngeal polypi, collected from the literature and arranged in reference to the age and sex of the patients and the nature of the tumor.

61 5. **Contagiousness of post-nasal catarrh.** Blackwood writes that it is his belief, from close observation, that post-nasal catarrh is under certain conditions contagious, even when positively non-syphilitic. He has repeatedly seen the disease occur in newly-married persons, and where children previously healthy had slept with those thus affected. In all such instances there was no hereditary tendency, nor were other members of the family affected.

8. **Hinderance to the respiration by disease in the nose.** Dr. D. H. Goodwillie, in a paper read before the Canada Medical Association, refers to the deviation of the cartilaginous septum and hypertrophy of the soft parts as the chief causes of

nasal obstruction. For the cure of the former condition he showed a set of excising nasal forceps. On one blade of these forceps is a circular, ring-shaped knife, and this cuts against the flat surface of the other blade. Dr. Goodwillie simply applies the forceps and cuts out the deviating part. He reports a number of successful cases.

10. Operations for nasal polypi. Hartmann believes Blake's wire snare as modified by himself, to be the best instrument for removing nasal polypi: his method of using it does not vary from that, well understood and often employed by all surgeons. For diffuse polypoid swelling of the turbinated bones, the galvano-cautery loop is of more value; this is likewise true of its use, as a means of destroying the base or seat of the polypus and in subsequent operations for recurrence of the growths, where it is much the more certain procedure.

12. Naso-pharyngeal chondroma. Patient, aged 22, had suffered for five years with an enlargement below the inner corner of the left eye, the left, and later the right nasal passage became gradually filled up, so that the patient had to breathe through the mouth. On examination, face broadened, nasal voice, open mouth. In upper left side of nose, a hard, rounded growth. A tumor could be observed in the left nasal passage, filling it and pressing the septum aside, the hard palate was convex and perforated by the tumor which filled the opening, the naso-pharyngeal space was felt to be filled with a round smooth, bone-like, immovable tumor. The question lay between osteoma and chondroma, a needle thrust into it showed its cartilaginous character. It was removed through the face, together with a portion of the upper jaw. It grew from the left side of the nose, filled the antrum of Highmore and perforated the nasal septum.

Chondroma of the nasal passages is very rare, Weber found it only eight times in 307 tumors of the nasal passages, and out of 267 chondromata of various regions of the body, only eight occurred in this part.

16. Treatment of mucous polypus of the nose. Miller recommends that the polypus be freely punctured by means of an acupuncture needle, and then sprayed with alcohol.

20. On exostoses of the nasal septum. In a case of displacement of the nose, due to a tumor in the left nares, hard and completely obstructive, R. utilizes the opportunity to speak of the ætiology and pathological anatomy of exostoses of the septum. His remarks on the former subject are certainly very superficial, among other causes, the fact that children always have their little noses cleansed upon the same side! is given, in all seriousness. Thickening of the nasal septum is generally to the extent of 7 to 12 millimeters, the exostosis reduces the affected naris to a minimum, while the other shows a concavity of the septum or general enlargement. Once R. has seen the tumefaction upon both sides. The growths arise, not from the

bony, but from the cartilaginous septum, and their removal is effected either by means of the forceps, with which the tumor is crushed down and extracted in bits, or by its excision with probe-pointed knives and scissors. The hemorrhage which follows, he stills with tampons and perchloride of iron.

22. **The galvano-cautery in nasal catarrh.** Dr. Shurley has been led to believe, with others, that more or less destruction of a portion of the altered mucus membrane must be accomplished in order to effect a cure in this disease. This becomes necessary, not only for the important object of relieving mechanical obstruction of the nasal passages; but also—through destruction of glandules, varicose blood-vessels, etc.—for the purpose of exciting physiological cell growth in the surrounding tissues.

27. **Therapeutics of catarrh of the antrum.** After detailing the history of a case, and commenting upon the impossibility of washing away the fetid pus in the antrum with the stream of the nasal douche, he recommends the use of an inhalation apparatus. After the cleansing of the general mucous membrane of the nasal passages, by means of the douche and a solution of common salt, a two per cent. solution of tannin and glycerine, and later a solution of alum acetate in spray are inhaled through the nose. By these means in his case the patient was cured of his ozæna in six weeks, and has since remained so.

28. **Operations on naso-pharyngeal polypi, with the assistance of anterior rhinoscopy.** As in his earlier and well-known works, Zaufal here also extols the practical value of an anterior examination of the nasal cavities specially for the operation upon naso-pharyngeal polypi. Under certain circumstances posterior rhinoscopy is essential, but for large growths which fill up, more or less, the naso-pharyngeal space, it is of little or no value; here anterior rhinoscopy affords a method, by means of which the operator comes, by the shortest path, directly upon the seat of the tumor. Its removal is effected according to Z. not by the forceps, but under the guidance of the eye, with the wire snare or the galvano-cautery loop, the methods of employing either in the various forms of case met with, are very fully and clearly given in his essay.

TRACHEA.

1. Barstscher. A statistical contribution to tracheotomy. *Deut. Med. Wochensch.*, No. 3, 4, 1880.

2. Broadbent: Aneurism of the arch of the aorta; pressure on trachea and recurrent laryngeal nerve; relieved. Case. *Med. Times and Gaz.*, Jan. 31, 1880.

3. Carrié. Causes prohibitive of the final removal of the canula after tracheotomy. *Dublin Jour. Med. Sci.*, February, 1880.

4. KÖRTE. On certain rare diseases which follow tracheotomy for diphtheritis. *Centralblatt für Med. Wis.*, No. 4, 1880.

5. MASTIN. Tracheotomy for croup : analysis of 863 operations. *Gaillard's Med. Jour.*, Jan., 1880.

6. ROUTIER. Tracheotomy in a case of apparent death from œdema of the glottis. Case. *La France Méd.*, Aug. 27, 1879.

1. Causes prohibitive of the final removal of the canula after tracheotomy. M. Carrié does not propose to pass in review all the causes which may constitute an obstacle to the removal of the canula. He limits himself to the study of two varieties of tracheal constriction. The first, although relatively rare, has been, however, demonstrated already in a certain number of cases. It arises through the presence of fleshy growths springing from the wound, especially through those deeply seated upon the corner of the tracheal incision, and which grow in the midst of cicatricial tissue. The second variety of tracheal constriction treated by M. Carrié has up to the present time not been described. A tracheotomized child was seized with a fit of suffocation just as the physician was attempting to effect a permanent removal of the canula. Examining the depths of the tracheal wound, he perceived a reddish prominence in the interior of the trachea, which was taken for a fleshy vegetation of the posterior wall. The child died in a fit of suffocation.

Prof. Guyon recognized upon the *post-mortem* specimen sent him that the projection regarded during life as a vegetation was formed by the posterior wall of the trachea itself, which was folded longitudinally in its entire thickness. This folding was due to the approximation of the posterior extremities of the tracheal rings, separated anteriorly for the introduction of the canula.

4. Rare conditions following tracheotomy for diphtheria. 1. Granulation tumors in the trachea, causing stenosis, four cases are reported, in three of which the narrowed point was above the upper edge of the tracheal tube ; once, a like condition, from ulcer, on the anterior tracheal wall. The treatment in three of the cases consisted in the removal of the granulations with the sharp spoon ; in the other, pencillings with a solution of nitrate of silver and the introduction of a larger canula.

2. Cicatricial stenosis, three cases, which were treated by gradual dilatation ; Dupuy's tube in two, and in the third, an obstinate case, by direct incision into the air tube ; the location of the cicatrix was, in each, above the canula.

3. Ulcers on the anterior tracheal wall ; three cases were fatal ; one by erosion of an artery. The ulcers were diphtheritic, and on *post-mortem* examination found to be much larger than was expected. In such instances Körte recommends the use of Hasse's tracheal tube on account of its peculiar curve.

5. Tracheotomy for croup. Mastin gives a tabulated report of 863 tracheotomies for croup, from an analysis of which he deduces the following conclusions :

1. Tracheotomy, *per se*, is almost devoid of danger.

2. Fatal hemorrhage should almost never occur, and care, with coolness, will generally prevent apnœa from intra-tracheal bleeding.

3. Age offers no contra-indications, although the average of success is less in early infancy than in adult life.

4. Early operative interference—whenever the paroxysms of dyspnœa become at all lengthened—is demanded, since delay only adds to the sufferings of the patient and materially lessens the chances of recovery.

5. The after treatment is of prime importance ; careful attention to the wound, proper treatment of the disease and proper nursing, with fair hygienic surroundings, bring the essentials to a successful issue.

FOREIGN BODIES IN THE AIR PASSAGES.

1. Elias. Leech fixed twenty-four days at the entrance of the larynx ; extraction ; cure. *Gaz. Méd. d'Orient*, Constantinople, 1879–80, xxii, 61.

2. Galland. Foreign body in the trachea (part of ear-ring ;) tracheotomy ; cure. *Ann. des Mal de l'oreille et du Larynx*, 209, 1877.

3. Le Fort. A button in the nose ; difficult extraction. *Bull. et mem. de Soc. de Chir. de Paris*, 1879, v, 710,

4. Michon. Bit of clam shell in the air-passage ; ejected after six months ; cure. *Tribune Méd.*, No. 582, 1879.

5. Prati. A living fish in the right bronchus. *Lo Sperimentale*, Nov., p. 494, 1879.

6. Stetter. Foreign body in the larynx ; fish bone ; removal ; recovery. *Arch. für Klin. Chir.*, Vol. xxii, fasc. 4, 1879.

7. Tempesti. Death, caused by the entrance of a fish into the larynx. *Monatssch. für Ohrenheilkunde*, No. 1, 1880.

8. Tiffany. Foreign substance in the nose ; shoe button ; perforation of septum ; removal ; cure. *St. Louis Med. and Surg. Jour.*, 1879, xxxvii, 494.

9. Voltolini. A sewing needle above the bifurcation of the trachea ; removal. II. A tooth 3⅓ cm. long, nine months in the right lung. Cases. *Monatssch. für Ohrenheilkunde*, Dec. 1879.

7. Fish in the larynx, death. A robust fisherman, endeavored to loosen a small fish, which had become entangled in his net by catching its head between his teeth ; the fish slipped into his throat and he fell dead in a few moments, and before medical aid could be summoned. On *post-mortem*, the fish was

found lying two-thirds in the larynx, the remaining part with the tail against the base of the tongue. Had aid been at hand, it could readily have been caught and removed.

MISCELLANEOUS.

1. ANDREWS. A study of inflammations of the throat. *Detroit Lancet*, iii, 145, 1879–80.

2. CHILTOFF. A practical review of laryngoscopy. Charkoff, 1879.

3. FISCHER. Diseases of the neck (throat). Lieferung No. 34. Billroth und Luecke. *Deutsche Chirurgie*, Stüttgart, 1880.

4. GRÜTZNER. Physiology of the voice and speech. *Handbuch der Physiologie, von Hermann.* Erster Bd., 2ter theil, 1879.

5. HEATH. Spindle-celled sarcoma of the thyroid, involving larynx; secondary deposits; death. Case. *Med. Times and Gaz.*, Dec. 13, 1879.

6. JOHNSTON. Some affections of the upper air passages. *Atlanta Med. and Surg. Journ.*, Jan., 1880.

7. LEE. Mistaking a traumatic aneurism for an abscess of the roof of the mouth. *N. Y. Med. Record*, Jan. 24, 1880.

8. MACEWEN. On the introduction of tubes into the larynx through the mouth, instead of tracheotomy and laryngotomy. *Monatssch. für Ohrenheilkunde*, No. 1, 1880.

9. WITKOWSKI. A movable atlas, showing the positions of the various organs of voice, speech and taste; the text translated by Lennox Browne. *The Tongue and Throat*, Bailliere, 1879.

10. WOAKES. Throat deafness, associated with paresis of the palato-tubal muscles. *Am. Journal of Otology*, Jan. 1880.

11. ZAUFAL. On the plica salpingo-pharyngea. *Archiv für Ohrenheilkunde*, No. 5, 1879.

6. ZAUFAL. Fistula colli congenita. Case. *Monatssch. für Ohrenheilkunde*, No. 1, 1880.

1. Inflammations of the throat.

Andrews reports seven cases to prove the duality of membranous croup and diphtheria, and suggests the importance of diagnosing the one from the other.

4. Physiology of the voice and speech.

Reviewed elsewhere in this journal.

6. Affections of the upper air passages.

We regret that want of space will not permit us to give more than the titles of the five very interesting cases reported by Dr. Johnston. They are as follows:

1. Papilloma of right vocal cord.
2. Stenosis of larynx from tertiary syphilis.
3. Acute laryngitis from inhalation of coal dust.
4. Retro-pharyngeal abscess.
5. Abscess of nasal septum.

8. Introduction of tubes into the larynx through the mouth. Macewen communicates the details of three cases in which this method was successfully employed. In the first patient, a carcinomatous tumor was removed from the pharynx, while the anæsthesia was conducted through a tube passed through the larynx, the tube also prevented blood from running into the trachea. In the second case, one of acute œdema of the larynx, and the third, also of œdema, both with stenosis of the larynx, a tube was passed and the patient saved from a tracheotomy. The tube remained thirty-six hours in position and was then removed.

12. Fistula colli congenita. A case of this rare abnormality is reported in an Australian journal. A boy of seven had a small opening in the skin on both sides of the neck, the largest upon the left side, was to the inner edge of the sterno-mastoid muscle, just below the angle of the jaw. On the right side, it was in front of the same muscle, one inch above the clavicle; the left fistula allowed of the passage of a sound two inches upward, toward the left tonsil, the right only to the depth of one-half an inch. From both passed a clear mucus. The ears were normal. Treatment with the galvano-cautery caused the closure of both.

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NOTES AND QUERIES.

ANNOUNCEMENT TO CONTRIBUTORS.

Arrangements are now being completed by means of which contributions to the ARCHIVES will be published either in their entirety or in abstract, and as nearly simultaneously as possible, in the only two other periodicals that exist devoted to Laryngology, viz., the MONATSSCHRIFT FÜR OHRENHEILKUNDE SOWIE FÜR NASEN-, RACHEN-, KEHLKOPF- U. LUFTRÖHREN-KRANKHEITEN, published in Berlin, and the ANNALES DES MALADIES DE L'OREILLE, ET DU LARYNX (OTOSCOPIE, LARYNGOSCOPIE, RHINOSCOPIE) ET DES ORGANES CONNEXES, published in Paris. Our contributors will thus obtain the advantage of their articles immediately becoming known to a circle of readers extending over the medical world.

MEETING OF LARYNGOLOGICAL SOCIETIES.

The next meeting of the AMERICAN LARYNGOLOGICAL ASSOCIATION will take place in the City of New York, on May 31st, 1880, and continue during the following two days.

The next meeting of the NEW YORK LARYNGOLOGICAL SOCIETY will take place at the rooms of the New York Academy of Medicine, on the evening of June 10th, 1880.

The attention of the readers of the ARCHIVES is called to the fact, that in the accompanying issue the usual limit of ninety-six pages has been exceeded by twelve. This excess is deemed necessary in the present instance, and is willingly granted by the management of the Journal; not only that a fair amount of the valuable literary material now on hand may secure a timely appearance, but mainly in order that the lengthy abstract and review of cotemporaneous literature to date, may be placed before our subscribers while it is recent, and, therefore, possesses novelty and freshness. The utility, not to say necessity of such a course will be recognized and appreciated by all readers and workers in the specialty.

ARCHIVES OF LARYNGOLOGY.

SOME CLINICAL CONSIDERATIONS ON ACCESS TO BENIGN INTRA-LARYNGEAL NEOPLASMS THROUGH EXTERNAL INCISIONS; AS ILLUSTRATED IN A SMALL GROUP OF PERSONAL OBSERVATIONS HERETOFORE UNREPORTED.

By J. SOLIS COHEN, M.D.,

PHILADELPHIA.

BY far the greater number of intra-laryngeal neoplasms are accessible to laryngoscopic procedure; and it is the general opinion of those whose actual experience renders their judgment reliable, that no external operation should be resorted to, in the absence of immediate emergence, until the failure of intra-laryngeal resources has been amply demonstrated.

In certain exceptional instances, however, peculiar conditions of location and magnitude of growths, or of age, vigor, and tractability of patients, render laryngoscopic interference hazardous or impracticable, and external access imperative; while there is an intermediate group of cases in which safety in intra-laryngeal manipulation is secured by preliminary tracheotomy or its equivalent.

Several external operations are practiced for direct access to intra-laryngeal neoplasms, the choice, in any instance, being determinate upon the individual peculiarities of the case. These operations are: Section of the middle crico-thyroid ligament; section of the thyroid cartilage in the middle line; section of thyroid cartilage and middle crico-

thyroid ligament; section of the entire larynx; section of the trachea; and section of the thyro-hyoid membrane.

Section of the cricoid cartilage is rather to be avoided, if possible, as its division is apt to impair the solidity of the laryngeal skeleton, and is liable, though but rarely, to be followed by necrosis.

Section of the thyroid cartilage is likewise to be avoided if other means suffice for ample access to the neoplasm; as the consequent agglutination of the anterior portions of the vocal bands, in cicatrization, cannot be effectually prevented; and the resulting diminution in the length of the vibrating portions of the vocal bands necessarily impairs the quality of the voice, the shrill accentuation of which attracts attention, which, to a sensitive female particularly, may be a more or less continuous source of mortification.

I.

SECTION OF THE MIDDLE CRICO-THYROID LIGAMENT.

Small growths, immediately beneath the vocal bands, or upon their edges, and inaccessible to intra-laryngeal manœuvres, are not infrequently accessible to direct attack through an incision made in the middle crico-thyroid ligament. This operation, the easiest of the series, involves the minimum risk incurred in artificial openings into the air-passage; leaves but an insignificant external cicatrix; and does not engender any impairment of vocal function. It is readily performed; the opening permits satisfactory illumination; and the wound, in the adult, is usually large enough for the introduction of a canula, should there be occasion to keep it patent for a few days or longer. There is, therefore, sufficient reason to select this operation in preference to other external methods of access, when the size and location of the growths are such as to offer a prospect of success in the object to be accomplished.

It is indicated in individuals who gain their livelihood by public use of the voice, and in those who are rendered nervous and irritable by the presence of growths which impair their vocal powers, even when the function of respiration is not at all impeded.

OBSERVATION.—*Case of section of the middle crico-thyroid ligament for direct destruction, by the galvano-cautery of benign subglottic neoplasms of the vocal bands.*

* * *, a gentleman, thirty years of age, had been under my care some years previously with extensive papillomata, occupying both vocal bands, both ventricular bands, and several points on the laryngeal face of the epiglottis. These had been removed by evulsion, at various interviews, in the usual manner; but small nodules had remained beyond my reach, and beyond the reach of other laryngoscopists, directly beneath the anterior commissure of the glottis, and upon the lower surfaces of both thickened vocal bands. The voice, previously aphonic, was audible, but hoarse and muffled; and was not loud enough for public use, or for general conversation save with persons in close proximity. This condition having continued with but slight amelioration, despite a few series of treatments at prolonged and irregular intervals, I was again consulted on May 5, 1878, as to the utility of an operation frequently suggested during my previous care of the case, but hitherto avoided by the patient in the hope of spontaneous restoration of the voice, or its improvement by less disfiguring methods. The proposed operation comprised division of the middle crico-thyroid ligament, and immediate destruction of the growths by direct access with the galvano-cautery.

On May 12th, with the assistance of Drs. John H. Packard and R. M. Smith, I performed the operation upon the sitting patient, without resort to anæsthesia. A vertical incision, half an inch in length, exposed the ligament which was then divided from its attachment to the thyroid cartilage. The ligament retracted immediately and left an opening affording good access to the parts, which were brilliantly illuminated by reflected sun-light, so that it was not difficult to tear off the growths, of which there were several, at the commissure, and to sear their point of implantation; as well as to destroy two small masses of growths on the lower surfaces of the vocal bands, respectively, with a fine pointed galvano-cautery. Durham's double canula was inserted through the external opening, and retained for a few days in order to maintain patency of the wound in case subsequent manipulation should be required; but further cauterization was found to be unnecessary, and the wound was allowed to close. An abscess formed on each side of the wound, requiring attention for a few days; otherwise recovery

was prompt and satisfactory. Marked improvement of voice became manifest as soon as the wound cicatrized, and at last accounts, a few months ago, had remained fairly good for conversational purposes ever since ; of considerable volume, though not loud enough for public use, nor as clear as a normal voice. The thickening of the vocal bands continued marked the last time I examined the larynx, some few months after the operation. The scar of the external incision is insignificant, and invisible above the shirt collar.

II

SECTION OF THE THYROID CARTILAGE.

Thyrotomy, thyroidotomy, or section of the thyroid cartilage, is indicated to remove injurious intra-laryngeal neoplasms which are not accessible to laryngoscopic operation, or to the simpler and less pernicious external procedures. Its extreme liability to impair the voice irretrievably is always to be borne in mind ; and for this reason it may be questionable, in certain cases, especially in children, when the growth is in the upper portion of the larynx, whether the more conservative operation of sub-hyoid pharyngotomy should not be performed in preference.

If thyrotomy suffices to expose the interior of the larynx sufficiently, there is no occasion to incise the conoid ligament, as is usually done, and done with impunity ; and if the extended incision through both these structures is insufficient, then it becomes necessary to divide the cricoid cartilage in addition, thus performing complete laryngotomy, —an operation sometimes practised, but not with impunity. The objections to unnecessary division of the cricoid cartilage are its special proclivity to undergo necrosis when injured, and the fact that this strong structure is the base, so to speak, of the laryngeal skeleton.

Thyrotomy, simple or extended, is usually practised after a preliminary tracheotomy, immediately preceding the major operation, or performed some days or weeks in advance as may be. It can often be safely undertaken without preliminary tracheotomy, however, as practised by Brauers, Cutter, of Boston, Mass., and others, and as done in my first

operation,* and in a recent instance herewith recorded; which latter is the first instance, during thirteen years, that I have been compelled to resort again to this method of access for removal of intra-laryngeal neoplasm.

OBSERVATION.—*Section of the thyroid cartilage for evulsion of infra-glottic papillomata.*

* * *, a lad, eight years of age, was recently brought to my clinic in the Jefferson Medical College Hospital with aphonia and intense dyspnœa. The supra-sternal soft tissues and the sub-sternal tissues were forcibly depressed in inspiration, as is witnessed in membranous croup. Two years before, he had an attack of whooping cough, subsequent to which his voice gradually became more and more husky, until it finally became extinct. He had had great difficulty in respiration for a number of months, latterly complicated with suffocative paroxysms at night. There was considerable general pulmonary emphysema. The cutaneous surface was cyanotic. Appetite was poor. There was great nervousness, so great, indeed, that the laryngoscopic inspection had to be practised during a fit of hysteric sobbing. The epiglottis and the upper portion of the larynx were seen to be normal, but it was impossible to direct the illumination upon the glottis during the momentary opportunities that were afforded. The subjective symptoms, however, were sufficiently indicative of important obstruction in the larynx; and the history of whooping cough, gradually increasing dysphonia, and subsequent dyspnœa were indicative of obstruction from benign neoplasm, in all probability papilloma, as the sequel proved to be the case.

As the demand for relief was urgent, and intra-laryngeal manipulation was hazardous in the excited condition of the patient, I admitted the lad to the wards of the hospital, April 23, 1880, and performed immediate thyrotomy before the medical class then assembled. Anæsthesia was produced in four and a half minutes by bromide of ethyl, administered with some struggling, under the direct supervision of my colleague, Dr. R. J. Levis, the staunch advocate of this recently employed anæsthetic. There were several enlarged veins in the track of the knife after the cutaneous incision had been made; and during the few minutes occupied in tearing the connective tissue and pushing these

* *The Medical Record*, N. Y., 1867, p. 218.

vessels aside, the effect of the anæsthetic passed off and rendered a second administration necessary for a few minutes. I then divided the thyroid catilage from below upward, merely puncturing the uppermost edge of the crico-thyroid ligament; and when the wings of the cartilage were separated, came at once upon a mass of neoplasms, the bulk of a blackberry, attached anteriorly to the inferior surfaces of both vocal bands. These were rapidly removed by evulsion with forceps; the entire operation, including the stops for anæsthesia, occupying fifteen minutes. The effect of the bromide of ethyl was admirable in this instance, not the slightest unpleasant symptom following it. The cutaneous wound being secured by two sutures, the parts were supported by adhesive strips, and covered with a linen rag greased with carbolized oil. Consciousness was perfect before the dressing was finished, and at its conclusion the boy was placed in bed, and drank heartily of milk. Slight expectoration of blood took place for a few hours, but little air escaping externally in coughing. Recovery ensued promptly without any set-back; and the patient was dismissed at the end of a fortnight, with subsidence of the emphysema, a rough, audible voice, and a cicatrized wound.

III.

SECTION OF THE TRACHEA.

Tracheotomy is sometimes practiced, not only to secure immunity of respiration in case of untoward result from intra-laryngeal operations upon neoplasms of considerable magnitude, but with a view of operating upon the growths directly through the tracheotomy wound. In the few preliminary tracheotomies performed by myself in cases of intra-laryngeal neoplasms, I have failed to be able to make avail of the opportunity for immediate access to the growth, by reason of the entrance of blood into the trachea, and its disturbance by cough to such an extent as to render it impracticable to illuminate the larynx sufficiently from below, or to be able to operate without risk of injury to sound structures and, have, therefore, been compelled to be content with the original object of the procedure—to ensure safety from asphyxia during subsequent laryngoscopic interference.

It sometimes happens, however, that access to infra-glottic growths may be effected through the tracheotomy wound, a few days after the operation.

OBSERVATION.—*Removal of subglottic fibroma through the wound of tracheotomy. The tracheotomy by Dr. S. W. Gross.*

* * *, a watchmaker, aged forty-eight years, was brought to my office Jan. 8, 1878, almost suffocating from dyspnœa, with harsh stridor in both phases of respiration. Laryngoscopic inspection revealed the existence of one or more intra-laryngeal neoplasms, the extent of which could not be accurately determined, on account of great swelling of the arytenoid cartilages and considerable pendancy of the epiglottis. The story was that the voice had been hoarse for a number of years, but that aphonia and the dyspnœa had rapidly augmented within the few days of their occurrence, consequent upon prolonged exposure to inclemency of weather. An acknowledgement was made of primary syphilis in early manhood, but there was no absolute trace of dependance of the laryngeal condition upon the initial specific lesion, nor did the subsequent history of the case increase the imputation of its specific origin.

The dyspnœa became so great on my attempt at intra-laryngeal manipulation, that it was deemed prudent to desist, and perform tracheotomy as a preliminary measure. As the patient had not suitable accommodations at his home to provide for effectual supervision after the operation, I had him admitted to the surgical ward of the Jefferson College Hospital, and on the following day my colleague, Dr. S. W. Gross, in charge of the ward, performed the tracheotomy, without anæsthesia, at my request. The patient recovered promptly from the operation. A few days afterward, he sought the laryngoscopic room under my charge to undergo treatment for his growths. On removing the canula to examine the tracheal fistula, I was able to observe the lower portion of a growth through the wound. The mass was readily seized with ordinary nasal polyp forceps, and removed by torsion. It was the size of a small lima bean, and proved, under the microscope, to be a fibroma. Laryngoscopic examination proving the evulsion to have been complete, the wound was allowed to close, and became firmly cicatrized spontaneously within three days. The attachment of the growth could not be satisfactorily ascertained by tracheoscopy, as the entire lower surface of the anterior commis-

sure of the glottis, whence it probably had attachment, was bloody; but laryngoscopy showed that it had been, at all events, infra-glottic. The swelling of the arytenoid cartilages had entirely subsided.

The patient's voice became sonorous as soon as the wound had healed; was quite loud after the wound had closed; and within a few weeks was reported as good as ever, even to disembarrassment from hoarseness, which had long become habitual.

IV.

SECTION OF THE THYRO-HYOID MEMBRANE.

Sub-hyoid pharyngotomy, supra-thyroid laryngotomy, or section of the thyro-hyoid membrane is occasionally practiced for direct access to intra-laryngeal growths. Clinical experience as to its efficacy is too meagre and unsatisfactory to indicate its proper position as a legitimate operation for external access to intra-laryngeal growths. Experiments upon the cadaver, as well as the reported location of growths in recorded operations, seem to verify the assertion long ago made by Morell-Mackenzie, that the very cases favorable for the operation are those which, as a rule, can be most easily treated through the mouth. In the instance recorded below, it was demonstrated that the access afforded to the growths by the operation, was less than that previously attained laryngoscopically.

In the case of females especially, and in individuals to whom integrity of vocal powers is of importance, it is possible that access to growths high up may be made by this form of median pharyngotomy, without recourse to the more detrimental operation of median division of the thyroid cartilage. The access afforded to instrumental interference is limited in this operation; and the size of the epiglottis, and general anatomical outline of the upper structures of the larynx, may have to be taken in serious consideration in estimating the propriety of resort to this operation, in cases of doubt.

From some personal operations performed on the dead subject by Dr. John H. Packard, both previously to the case

herewith reported and subsequently, that gentleman expresses the opinion that this operation would afford sufficient access to neoplasms on the vocal bands in the adult, but that the parts are too small in the child to make it available, even upon the cadaver.

OBSERVATION.—*Sub-hyoidean pharyngotomy upon a child for direct access to benign intra-laryngeal neoplasm; with failure of satisfactory access to the growth. The pharyngotomy by Dr. Packard.*

* * *, a female child, five years of age, was placed under the care of Dr. John H. Packard, of Philadelphia, with aphonia dating from birth, and slight dyspnœa, with occasional exacerbations at night. Being invited to precede the doctor in a laryngoscopic examination in consultation, I detected, by direct sunlight, a neoplasm at the anterior commissure of the vocal bands, and apparently at the very root of the epiglottis. This diagnosis being confirmed, I inserted a pair of rectangular forceps at Dr. Packard's request, and succeeded at once in removing a fragment of papilloma, the bulk of a small pea. The child resisted submittance to a second manipulation, and further interference was postponed for the day. At a subsequent interview, about a week later, I failed, in the one chance unwillingly accorded me, to remove any portion of the growth. As circumstances rendered repeated interviews with the patient impracticable, it was determined, on further consultation, to attack the growth from the exterior upon a convenient occasion in the near future, and to perform subhyoidean pharyngotomy in preference to thyroidotomy, in order to avoid direct injury to the vocal bands, which, in all probability, would impair the voice irreparably, and thus be a source of annoyance to the girl as she grew to womanhood; and because the neoplasm was sufficiently high up in the larynx to promise satisfactory access by the method proposed.

In December, 1879, Dr. Packard performed the pharyngotomy, under anæsthesia, with the assistance of Drs. Seiler, Harvey, Shippen and myself; but when the epiglottis was drawn out through the wound it was found impossible, either by direct sunlight or by reflected light, to illuminate the interior of the larynx beyond a meagre area just below the upper border of the aryteno-epiglottic folds; so that the growth could not be exposed to vision.

Knowing the location of the neoplasm, I introduced the forceps and withdrew a small portion ; but the parts were too small to admit the passage of both finger and forceps, and during several attempts at further removal I found it impracticable to avoid confounding the contour of the tumor with that of the supra-arytenoid cartilages, which bent forward, the moment the instrument reached the growth, to such an extent, during the spasm provoked by the manipulation as to become firmly pressed against the neoplasm, and thus confound the digital perception of their respective boundaries. The risk of catching one or both supra-arytenoid cartilages was too great to justify a hit or miss at evulsion ; and I gave the attempt up. Drs. Seiler and Packard exerted their skill in similar efforts without better result.

As the dyspnœa seemed entirely relieved when the parts were held in apposition, Dr. Packard closed the wound and had the child removed to bed, with the intention of awaiting recovery from the pharyngotomy, and of being guided by circumstances as to the propriety and character of further interference.

Recovery was prompt, and at last accounts there had been no return of dyspnœa. The voice remained husky ; but was no longer aphonic. I have not seen the patient since, and no opportunity has been afforded for a laryngoscopic examination. The patient having been lost sight of, it is impossible, at present, to report the ultimate result of the operation.

In this case more was accomplished by laryngoscopic procedure, both as to illumination of the neoplasm and actual evulsion, than by the direct access afforded by the external operation.

FUNCTIONAL SPASM OF THE LARYNX.

By Prof. C. GERHARDT,

WÜRZBURG.

I.

[Communicated in German.]

UNDER this name I have described the spasmodic disturbance with which a flute-player was affected whenever he produced certain notes. The comparison with writer's cramp, milkmaid's cramp, etc., seemed the more apt as the patient had had several years before, while writing notes, scrivener's cramp. Very soon after publishing the case, a second in many respects similar, came under my notice.

First Lieutenant Von. H., who had never had any disease except measles, occasionally suffered with hoarseness, which, however, did not prevent him from having an excellent voice for command. During the war of 1870, he received a slight wound in the shoulder, and in camp was often exposed to wet and cold. After the war, on several occasions when commanding, his voice suddenly left him. This occurred particularly when pronouncing energetically some words or syllables, as for example, the second syllable of the word *bataillon:* occasionally, instead of entirely leaving him, his voice suddenly became falsetto. At all such times he would have to make the movement of swallowing repeatedly, would have a sense of constriction in the region of the larynx and swelling of the throat, necessitating loosening of his cravat, a feeling of anxiety and even loss of consciousness. These attacks

have recently become more frequent and occur whenever he gives loud commands, sometimes even on walking rapidly.

When, on August 11, 1873, I examined the patient, I found the chest healthy, slight pharyngeal catarrh, some stroma on both sides, an enchondritic projection on each side of the cricoid cartilage, normal laryngoscopic image, and systolic murmurs over the carotids.

This was evidently a case of spasm of an organ abnormally exercised, occurring at every attempt at over-exertion. It is not unusual for such spasmodic affections to extend beyond the muscles originally involved; and here the spasm passed from the adductors of the vocal bands to the muscles of the pharynx. The most characteristic form of such spasm is that in which the excessive movement intended prevents the attainment of the desired object. But in writer's cramp, the best known neurosis of occupation, it has been found that this is by no means always the way in which the spasm is brought about; sometimes the disturbance is caused by predominant spasm of the antagonistic extensors, sometimes by a sudden paralysis-like weakness. What the exact pathological process in my case was, I am unable to say, because even if I could have succeeded in causing the patient to have a spasm in my presence, I could not have used the laryngoscope at the same time.

The treatment consisted in the use of iodine ointment externally and iron baths (Driberg); afterward bromide of potassium internally, and the constant current. I also ordered the patient not to use his voice for commanding for two or three months, but to read aloud regularly. Some years afterward I heard that under this treatment he became completely cured.

This case seems to belong to the group of cases of phonetic spasm of the glottis described by Schnitzler* and Schech,† only in their cases, the spasm occurred at every attempt at phonation, while to produce it in my patient a particular mode of using the voice was necessary.

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* *Vienna Med. Presse*, Nos. 20 and 23. 1875.

† *Bayer. ärztl. Intelligenzblatt*, 1879, No. 24.

LARYNGO-TYPHOID

II.

JUST as typhoid fever may begin under the form of pneumonia, its primary localization being in the lungs, as shown by observations of Griesinger*, of Lépine, and in our Clinic,—so this polymorphous disease may likewise commence as a laryngitis, and be first localized in the larynx. The following case seems to prove this, and is of interest in many respects.

Otto R., æt. 18, teacher, has had measles, and twice pneumonia. His father, also a teacher, has often suffered from hoarseness. For a number of years Otto R. has been subject to hoarseness and cough with the slightest colds. On December 24, 1877, he was exposed to severe cold and wet. This was followed by severe chills, fever, pain in the throat and cough, with mucous expectoration. The voice was affected immediately; soon he became hoarser; when he entered the hospital he was completely aphonic. In swallowing there was severe, and on attempting to speak slight pain in the throat. From the first he had headache, dizziness and debility; soon after, also, hardness of hearing. On the 28th he took to his bed; the nights were restless and disturbed by dreams. On January 1, 1878, several copious bleedings from the nose occurred; on the 2d he entered the hospital with fully developed symptoms of typhoid fever, particularly enlargement of the spleen, and the characteristic roseolar eruption.

Laryngoscopic examination.—Epiglottis much reddened and swollen in its entire extent, its glossal face darkly injected, its upper edge whitish, as though gnawed, with a point as large as a pin's head of extravasation of blood. The laryngeal mucous membrane injected, the vocal bands dirty grayish-yellow, velvety and swelled in appearance, with traces of vessels at several points. Over both posterior vocal processes, dark extravasations of

* Virchow's Handbuch der Speciellen Pathologie und Therapie, Bd. ii, (2d ed.), p. 207.

blood several mm. in extent. The posterior laryngeal wall somewhat swelled. External pressure on the larynx painful at most points. The neighboring lymphatic glands swollen and sensitive to pressure.

While the typhoid ran its normal though severe course, and was treated in the usual way with cold water, repeated laryngoscopic examinations revealed the following conditions:

January 7th.—Epiglottis paler, more thickened, its edge showing several ulcers with lardaceous coating. The mucous membrane over the arytenoid cartilages more swollen, the inter-arytenoid fold thickened, with a lardaceous looking ulcer running lengthwise through it. Both vocal bands uneven, the right showing throughout its whole extent darkened blood points and striæ. The posterior part of the rima glottidis gapes a little more than before, during attempted phonation.

January 10th.—The swelling of the epiglottis increased, its free edge ulcerated. The ulcer on the posterior wall larger. The vocal bands uniformly dark red; both of them, particularly the right, ulcerated at the edge, especially posteriorly.

January 16th.—The sensitiveness to pressure over the larynx has become less, so also the pain in swallowing. Laryngoscopic examination showed the swelling and hyperæmia of all portions of the larynx decreasing; the ulcers of the epiglottis, of the posterior wall and of the vocal bands had commenced to heal.

February 13th.—R. left the hospital with a good voice; ulcers entirely cicatrized; strength completely restored.

Either the cold accidentally encountered the outbreak of the typhoid fever, or the fever was precipitated, *i.e.*, its period of incubation shortened, by the patient taking cold. It is true the latter view appears improbable, because four other cases of typhoid fever occurred at the same time in the seminary in which R. was. Nevertheless it seems to me hardly doubtful that by taking cold, or committing errors in diet, excesses, etc., a shortening of the incubatory period of infectious diseases is possible. In this case the effects of a cold and of the typhoid poison coincidentally affected a man who was strongly disposed, hereditarily perhaps, to laryngeal inflammations; whose larynx, indeed, was the "*locus minoris resistentiæ.*" The results were local inflammation and typhoid fever; the first did not, as might

have been expected, retain its catarrhal character, but from the beginning took the form of ulcerative laryngitis. On the very first day of observation, which was the ninth day of the disease, the laryngoscope showed a picture, such as we otherwise are not accustomed to find before the third or fourth week. A case like this suggests, it seems to me, the question whether typhoid ulcers of the larynx are not in closer relationship to the typhoid process itself than is generally supposed. For the answer we must, however, go to another field of inquiry, viz., that of the pathological anatomist.

A CASE OF UNILATERAL EXCISION OF THE LARYNX, PHARYNX, HYOID BONE AND BASE OF THE TONGUE. RECOVERY.

By ARPAD G. GERSTER, M. D.

NEW YORK CITY.

P. H., æt. 50, a barber by occupation, and a man of powerful physique, presented himself at the German Dispensary toward the end of November, 1879; he complained chiefly of steadily increasing dysphagia, especially with regard to solid food. He was examined by Dr. E. Gruening, who diagnosed the existence of a circumscribed ulcer in the sinus pyriformis of the right side, extending to the base of the tongue and to the corresponding side of the epiglottis. By the kindness of Dr. Gruening, the patient was transferred to the surgical department, and, on advice, he had himself admitted to the German Hospital.

He had been immoderately addicted to smoking and chewing tobacco all his life; otherwise his previous history presented no features of importance. About one year ago he had had an attack of hoarseness of short duration, since when he had occasionally experienced a grating sensation in the throat. Difficulty in swallowing solid food was noticed for the first time in August last, since when it has increased to such an extent, that even the deglutition of semi-fluid food would cause pain and salivation. The patient also complained of pain in speaking, the voice being somewhat hoarse, but distinct. No signs of laryngostenosis were present.

A laryngoscopic examination revealed the presence of an irregular, ill-conditioned ulcer, with slightly elevated hyperæmic margins, and about equal in size to a half dollar, occupying the

depression bounded by the right side of the base of the epiglottis, the right side of the base of the tongue and the right wall of the pharynx, a site corresponding to that of the glosso-epiglottic and aryteno-epiglottic folds, and more particularly to that of the sinus pyriformis. The mucous covering of the epiglottis was seen to be thickened and congested. The cervical glands did not appear to be affected. No evidence of syphilis could be elicited, either from the history, or from the physical examination of the patient, excepting a moderate degree of onychia, characterized by roughening of the finger nails. In the course of the treatment it became evident, however, that this latter trouble was due only to the fact, that in pursuing his trade, his fingers were much exposed to the action of soap lather.

Anti-syphilitic treatment was instituted and continued for some time with apparent benefit, the patient regaining to a certain extent the ability to swallow. The improvement was, however, merely temporary ; the dysphagia returned, and the patient soon began to suffer from the inanition thus engendered.

The patient was again examined by Dr. E. Gruening and Dr. G. M. Lefferts, who found that the disease had extended considerably, involving the entire right wall of the pharynx, the base of the tongue on the same side, and the tissues of the corresponding half of the larynx. The epiglottis appeared much thickened and was crowded over to the left ; the larynx proper, however, was not perceptibly displaced, owing to the flattened shape of the new growth. Externally no swelling or enlargement could be felt.

The malignant nature of the neoplasm and the necessary operative interference were explained to the patient, who willingly consented to undergo the operation, fully cognizant of the risk involved in the latter.

On account of imminent laryngo-stenosis, preliminary tracheotomy was performed January 18, 1880. This measure answered two purposes. Firstly, it removed the danger of a sudden closure of the already intumescent larynx, and, secondly, it allowed the patient time to accustom himself to the use of a tracheotomy tube.

The removal of the new growth could be effected either by an incision laying open the pharynx laterally, or through an opening created by a preliminary excision of the whole

or of a part of the larynx. The latter course was selected for the following reasons:

Langenbeck (*Archiv für Klin. Chirurgie*, vol. 24, p. 825) reports three cases of cancer, involving more or less of the pharynx and of the upper portion of the larynx, in which the diseased tissues were removed by a lateral incision, carried through the soft parts of the neck into the pharynx. The external and internal branches of the superior laryngeal nerve were necessarily divided in these cases. The internal branch is the sensory nerve of the mucous lining of the larynx; the external one is, according to the experiments of Longet the motor nerve of the constrictor pharyngis inferior and of the crico-thyroid muscle, the latter being the tensor of the vocal chord. The division of these nerves destroys the sensibility of one side of the larynx, and reduces the corresponding vocal chord to a permanent state of relaxation, which, according to Langenbeck, are conditions highly favoring the entrance of deleterious substances into the air passages. Two of these patients died of septic pneumonia, caused by the entrance of foreign or infectious substances —secretions or rejected food—into the bronchi; one died of shock a few hours after the operation.

The fact, that a considerable number of cases of extirpation of the larynx had recovered from the operation, seems to be due in a great measure to the possibility of preventing the entrance of deleterious material into the bronchi, by interposing a substantial barrier of plugs between the wound and the trachea. And as owing to the extent of the disease, a large portion of the larynx would have to be also removed in our case, the advantages of making this the initial step of the operation, were too obvious to be disregarded. The space created by the excision of the larynx would be sufficiently ample to admit of a safe dissection of the diseased portions of the pharynx, and further, it would offer during after treatment the possibility of an effective plugging of the entrance to the trachea.

The question, whether to remove the whole or only part of the larynx, was determined by the experience in a case of cancer of the larynx, in which Billroth operated (July

1878), by removing only the left half of the organ. The patient recovered so completely, that he could swallow and talk without the use of a canula.

Accordingly the operation was performed at the German Hospital, March 5, 1880, with the able assistance of Drs. Gruening, Bopp, Lefferts and Dr. Degner, the house-surgeon, to whom great credit is due for the skill and patience exhibited in the difficult and tedious after-management of the case.

An incision was carried from the median line of the hyoid bone, along its upper margin outward to the extent of three inches, exposing the right lingual artery, which was ligated. A second incision was carried downward from the starting point of the first, in the median line, to the opening for the canula, exposing the anterior surface of the hyoid bone and larynx, and the flap thus formed, was dissected up with all the underlying soft parts, and turned outward. Trendelenburg's apparatus had been fitted into the trachea. The right half of the hyoid bone was then exsected, a double ligature placed around the superior laryngeal artery, and the same divided. The crico-thyroid ligament was cut across, a pair of bone scissors inserted into the larynx and the thyroid cartilage divided in the median line. Trendelenburg's tampon-canula did not fulfill the requirements owing to a leak in the inflated bladder, so that blood managed to find its way into the trachea. An attempt to make it serviceable by winding layers of moistened gauze around the canula was unsuccessful, and during the rest of the operation it became necessary to fill out the lower part of the larynx with small sponges. The interior of the larynx was now exposed and showed an oval tumor, of about the size of a pigeon's egg, situated in the substance of the right false vocal cord, involving the posterior half of the true vocal cord, and the small cartilages belonging to it. The right half of the thyroid, and the whole of the arytenoid cartilage were now dissected up and removed, together with the whole epiglottis. The pharynx being thus exposed to view, its entire right side was seen to be diseased, and was removed together with the right tonsil, and the lower half of the right pillars of the palate. The base of the tongue, likewise involved, was dissected up on the right side with the scapel, on the left with the thermo-cautery. The hemorrhage was insignificant and the patient rallied promptly after the operation.

One of Tiemann's excellent soft rubber tubes was introduced

into the œsophagus, the wound thoroughly cleansed with a ten per cent. solution of zinc chloride, and the whole cavity packed with moistened balls of carbolized cloth. The edges of the horizontal incision were then united by catgut sutures.

The œsophageal tube was remarkably well tolerated and the patient's nourishment was satisfactorily effected through it during the whole course of the treatment.

The dressing was changed once every twenty-four hours, and since the immunity from lung complications seemed to be due mainly to the manner of applying the dressing, a few words regarding the same may be of interest. The packing was removed in two sections ; that is, the plugs immediately above the tracheal canula were first removed and replaced by fresh material, and then the rest of the dressing was changed (see cut No. 1). Thus

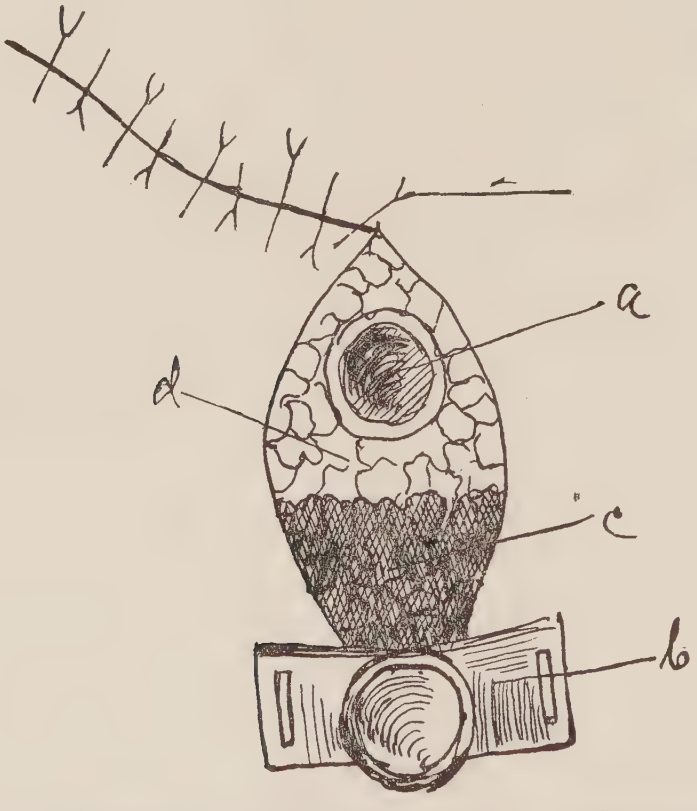


FIG. 1.—*a*, œsophageal tube ; *b*, tracheotomy tube ; *c*, plugs removed first ; *d*, plugs removed later.

the entrance into the trachea of the viscid glairy mucus, profusely secreted during the change of dressings, or of any deleterious secretions from the mouth, was prevented.

Owing to the free use of the chloride of zinc solution, no reaction whatever followed. Some very putrid sloughs came away

in the course of the first fortnight, but throughout no higher temperature was recorded than 101° F.

Food was frequently administered, the fluids through a funnel inserted into the opening of the soft rubber tube, the semi-fluid substances, to the great satisfaction of the patient, being forced through the tube by a large syringe.

On the tenth day following the operation, the patient consumed half a pint of strong coffee, five raw eggs, four glasses of wine, a pint and a half of milk punch, a pint of milk, two pints of a pasty mixture representing 2½ lbs. of beef, three bottles of beer and six ounces of whiskey.

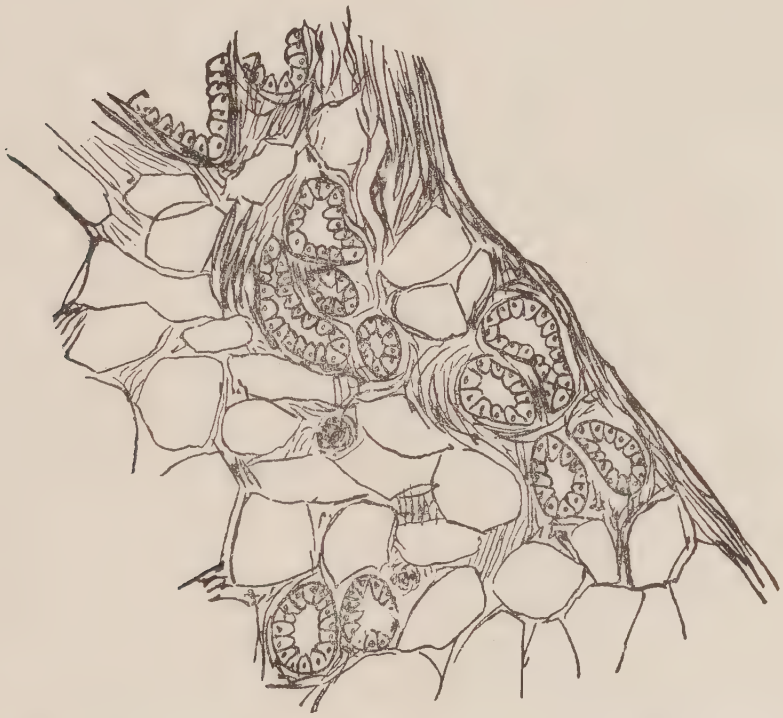


FIG. 2.—Dissemination of adenoid new growth in the adipose tissue of the ary-epiglottidean fold. 300 diam.

During a fortnight two carbolic spray producers were kept going in the patient's room. He noticed that the moist atmosphere materially diminished the formation of clots of inspissated mucus in the canula.

On the fifth day after the operation the patient was well enough to sit up in a chair for an hour. Three days later he could ascend a flight of stairs in being removed to another room, and a week later he spent most of his time out of bed. By the 1st of April, twenty-six days after the operation, he took a walk in the garden, and his weight had increased by 6½ pounds.

The large cavity contracted rapidly, and finally became a canal, bounded on one side by the remaining half of the larynx, on the other by a smooth cicatrix uniting the skin with the mucus membrane of the posterior wall of the pharynx.

A modification in the manner of dressing was introduced about this time, to enable the patient to make his first attempts at deglutition. A square piece of gauze, lined with a similar piece of very thin sheet rubber was pushed into the cavity, care being taken to leave a small space between the posterior wall of the

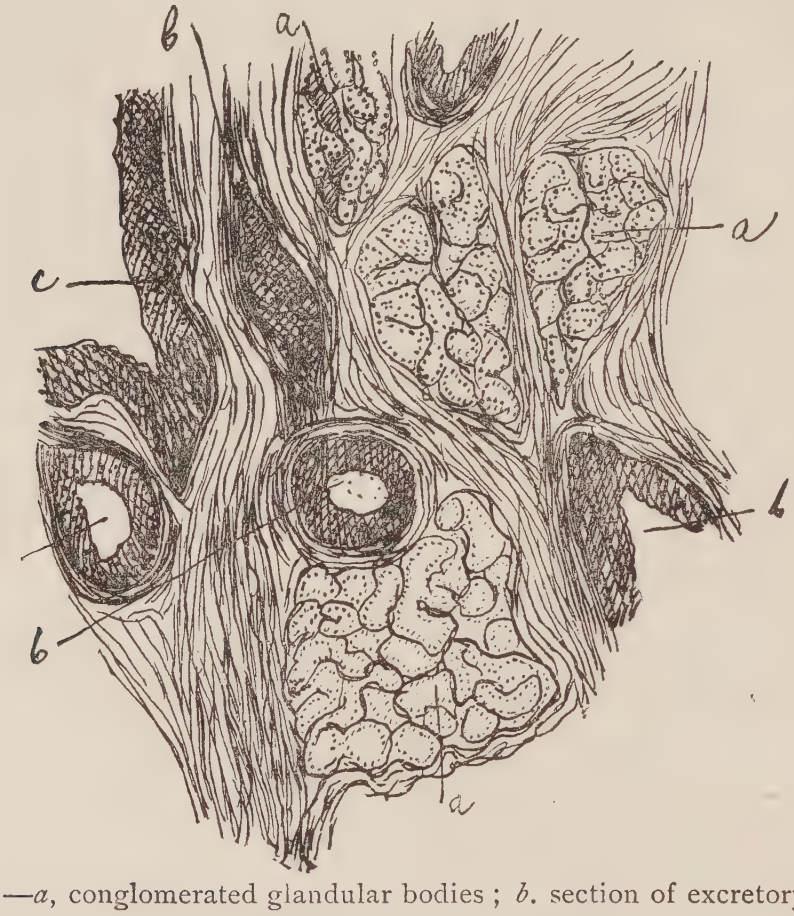


FIG. 3.—*a*, conglomerated glandular bodies ; *b*. section of excretory ducts ; *c*, epithelial surface ; 70 diam.

pharynx and the dressings. This bag of gauze and sheet rubber was stuffed full of smaller plugs, and the patient could easily swallow fluids. On the 29th of April the patient made a first attempt to speak. When the tracheal tube was closed, he could converse with a hoarse, dull voice, quite audible, and easily understood at a distance of from two to three yards. His ability to swallow has increased, but he prefers to use the œsophageal tube, to which he has become accustomed. By the 5th of May he had gained 14½ pounds in weight.

On microscopical examination the tumor revealed itself as a sarcoma of rather complex character. The flat ulcerated portions occupying the pharynx, the glosso-epiglottic and aryteno-epiglottic folds, consisted mainly of adeno-fibromatous tissue, its texture closely resembling the normal components of those parts, viz., the muciparous, racimose glands imbedded in the meshes of fibrous connective tissue. The only noticeable difference consisted in the rather irregular arrangement and distribution of the glandular elements, and their apparent tendency to undue proliferation toward those parts of the surrounding tissues, which exerted the least resistance, as for instance the adipose tissue (cut No. 2).

The excretory ducts of these glandular bodies were correspondingly numerous, and somewhat larger than usual

FIG. 4.—*a*, glandular tissue; *b*, excretory duct; *c*, fibrous and adipose tissue; 300 diam.

(cut No. 3). The points at which they emerged from the gland proper, were repeatedly found (cut No. 4), and their course was continuously traced to the surface, approaching which, their epithelial lining gradually assumed the character of the epithelium of the mucous surface (*b* and *c*, cut No. 3).

The ulcerated tumor occupying the site of the right false vocal chord was fibro-sarcomatous (cut No. 5), mainly consisting of histological elements of the connective tissue group. Its bulk was made up of fibrous connective tissue, wherein on sections tinted with hæmatoxylon, sparsely distributed small nuclei could be discerned.

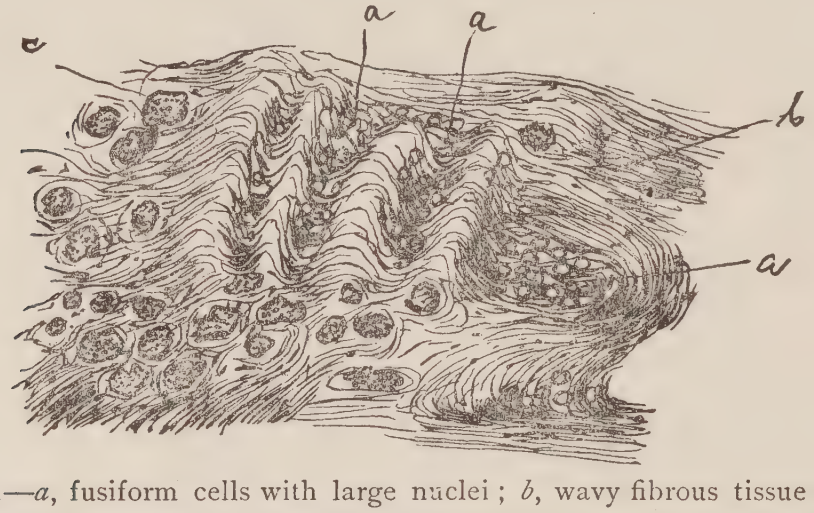


FIG. 5.—*a*, fusiform cells with large nuclei; *b*, wavy fibrous tissue with small nuclei interspersed; *c*, giant cells of different sizes. *Sarcoma of larynx.* 250 diam.

Some parts of this fibrous tissue had a wavy arrangement, and here large numbers of good-sized fusiform cells, with large shining nuclei could be seen (*a*, *a*, cut No. 5). Around these undulating portions, large multinuclear, irregularly shaped giant cells were imbedded in alveoli, formed by the surrounding connective tissue elements (*c*, *c*, *c*, cut No. 5). Adenoid structures were very few in this portion of the tumor, but large masses of newly formed adipose tissue were contained in its central portion. All these components of a new growth seemed to share evenly in their tendency to ulceration, as the ulcerating surface was found to involve both adenoid and fibro-sarcomatous parts uninterruptedly. We give in detail the

minute anatomy of the structures in this case, because there is one on record, which seems to have been identical in character with it, but which was otherwise understood and commented upon.

Prof. Maas, of Breslau, performed a total extirpation of the larynx June 1, 1873 (*Arch. f. Klin. Chir.*, vol. 19, p. 507), for what he terms "Adeno-fibroma carcinomatosum." This combination being a very unusual one, doubts as to the correctness of the diagnosis seem to be justified in the presence of the facts in our case. It seems, that the stout efferent ducts, provided with a thick basement membrane, were regarded as glands proper, and that the delicate glandular tissue, having only a thin but distinct basement membrane, was looked upon as a cancerous alveolar arrangement of epithelioid cells. To ascertain the non-cancerous nature of these conglomerations, it is necessary to compare them with the corresponding glands of a normal larynx, when it will be seen, that the calibre of many of the tubuli of the gland proper appears by no means always open, but is often filled by a seemingly compact group of nucleated epithelial cells, giving them, at first sight, a strong resemblance to the tubular arrangement of an epithelial cancer.

As the cuts accompanying Prof. Maas' paper are rather diagrammatic, and lacking in detail, we cannot enter more fully upon a discussion of the nature of the tumor, but merely suggest the above as a possible and simple explanation of its apparently anomalous character.

ON ANGIOMA OF THE LARYNX.

By Dr. O. HEINZE.

LEIPZIG.

[Communicated in German.]

ANGIOMATA belong to the tumors which occur exceedingly rarely in the larynx, or which, at least, have been hitherto very seldom described. In all the literature accessible to me, I have been able to find five cases only. I have observed, and operated upon, a sixth.

The five cases are as follows:

1. *Johnson's*, 1865, a "vascular cyst" occurring in a man 50 years old, which was situated in the anterior angle of the vocal bands, and was pinched off.

2. *Fournié's*, 1867, a "melanotic growth" on the epiglottis, destroyed by means of the galvano-cautery.

3. *Mackenzie's*, 1869, a "vascular tumor" in the right pyriform sinus, removed with forceps.

4. *Fauvel's*, 1872, an angioma in the anterior commissure, attached by a short pedicle to the right vocal band of a man of 53 years, and

5. *Fauvel's*, 1873, a "cavernous angioma" on the free edge of the left vocal band near the anterior commissure, in a man of 37, both evulsed by forceps.

Mackenzie's case is the only one he has met with in 100 consecutive cases of laryngeal polypi observed between the years 1862 and 1870, and Johnson's and Fournié's the only ones Mackenzie found recorded in 189 cases of laryngeal polypi observed between 1860 and 1870 by others; Fauvel's

two cases occurred in 300 observations between 1862 and 1875.

My case, observed in 1878, concerned a railroad official, 38 years old, looking somewhat anæmic and weak, who with healthy lungs, had long suffered from chronic pharyngeal and laryngeal catarrh and veiled voice, but had no other symptoms, and no idea of the tumor in his larynx. He had come to consult me merely on account of his catarrh. Aside from the catarrhal condition in the interior of his larynx, I saw at the border of the right ventricular fold, looking out from under it, near the anterior commissure, a tumor of the size of half a lentil, and behind it separated by a free interspace, another tumor about half this size, both of the color of a black berry, roundish and uneven. The entrance to the right ventricle appeared about twice as broad as usual and as that of the left side ; and the fold forming its upper boundary was pushed up like a dome, especially its middle portion. To the touch with a probe, both tumors appeared soft, with depressable surface. When the parts had been sufficiently educated to allow the ventricular fold to be pulled away a little with the end of the probe, it was found that the growth came from the depth of the ventricle and that the two black projections seen at the border of the fold were portions of one and the same neoplasm. The anterior projecting portion, the larger, was removed with an ordinary wire loop ; an extremely violent hæmorrhage, lasting nearly half an hour, ensued from the stump. About a cupful of bright-red blood was lost before the bleeding was arrested by cauterization with silver nitrate ; it recommenced in the evening and was definitely stopped only by another and very energetic cauterization of the whole ventricular fossa. Very soon after, the smaller projection had become invisible, obviously because the main tumor had shrunken ; but in the course of three months a little black elevation could be detected in the same spot where the larger tumor had been. This enlarged slowly but steadily, and in ten months had attained to the size of a pea. I then destroyed the projecting portion of the neoplasm by repeated punctures with a sharp-pointed galvano-caustic instrument and cauterized the entire fossa with a flat galvano-cautery bent on its side. These operations produced almost no pain and but insignificant bleeding No recurrence has taken place.

This case of angioma differs from the other five especially on account of the very severe bleeding which occurred in

the first operation. Fauvel reports only bloody sputa in one case and nothing of the kind in the other. The cases of Johnson and of Fournié are inaccessible to me in the original, but Mackenzie observes of his own case that "the operation was attended with more hemorrhage than was usual."

As to treatment, it may be laid down as the rule, that in order to avoid possible danger, since it cannot beforehand be known whether a tumor of this kind will give rise to severe bleeding or not, the galvano-cautery should be employed for the removal or destruction of laryngeal angiomata; especially is this treatment necessary in such a case as mine, in which the size, extent and point of attachment of the neoplasm cannot be accurately determined.

It must further be pointed out that the angiomata operated upon by Fauvel and myself were of soft consistence, while Mackenzie lays stress particularly on "the extreme hardness of the growth." The piece removed by me lost its black color and appeared bluish-grey; and showed in section a fine spongy structure, and under the microscope, a network of connective-tissue with blood in the interstices and numerous blood-vessels.

MINUTE ANATOMY OF THE LARYNX, NORMAL AND PATHOLOGICAL.

By CARL SEILER, M.D.

II.

THE EPIGLOTTIS.

IN the last number of the ARCHIVES a description was given of the different processes employed in making these researches, and we are therefore now ready to enter upon the subject proper.

One of the most striking features of the upper part of the larynx is the epiglottis, not only because it projects beyond the upper margin, but also on account of its variable shape and size.

Its upper edge in man is slightly curved upward while frequently a notch is observed in the middle of the curve. The epiglottis of carnivorous animals, however, runs to a point. The length of this organ in man as well as in the lower animals, always stands in a certain relation to the length of the antero-posterior diameter of the larynx so that when the epiglottis is closed upon the laryngeal opening its upper margin is about $\frac{1}{8}$—$\frac{1}{4}$ of an inch from the posterior wall of the œsophagus. This observation was first made by C. L. Merkel* and was verified by myself in careful measurements of a large number of larynges both from man and the lower animals. This explains the fact that in children below the age of puberty when the diameters of

* Die Functionen des menschlichen Schlund und Kehlkopfes, Leipsig, 1865.

the larynx are comparatively small, the epiglottis projects but little beyond the upper margin of the thyroid cartilage, a fact to be born in mind when an operation for the removal of growths from the larynx through a transverse incision in the thyro-hyoid membrane is contemplated. In the adult the epiglottis may easily be drawn through the opening and thus access may be gained to the interior of the larynx, but in children this cannot be done, as I have found by experience in assisting at an operation of that kind.

The framework of the epiglottis is made up of a thin sheet of reticulated cartilage, in which the cells are held in the meshes of fibrous net-like stroma. This plate of cartilage is narrowed down to a thin strip near its insertion into the angle of the thyroid cartilage and widens out as it nears the upper margin. Its edges are thin and if stripped of the mucous membrane and submucous tissues; its posterior laryngeal surface appears pitted with numerous depressions variable in size shape and depth, some of which penetrate through the entire cartilaginous plate. These depressions serve as a receptacle for racimose glands, and the smaller ones contain loops of blood vessels by which the cartilage is nourished. (See Fig. 1.)

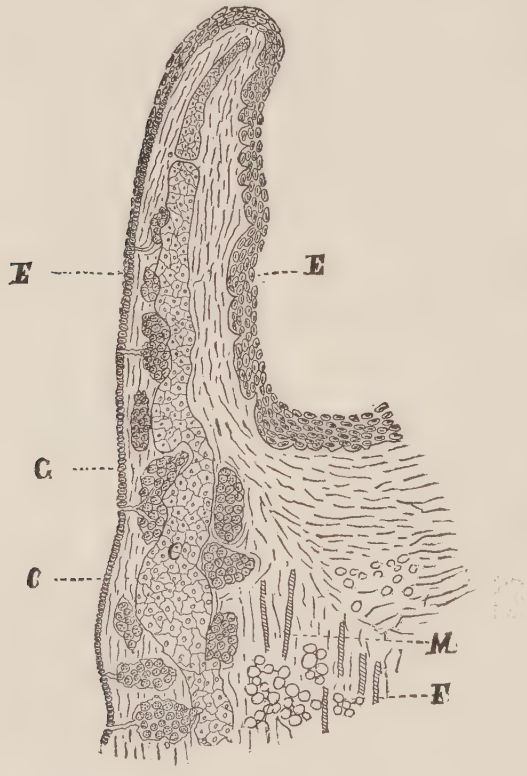


Fig. 1.—Longitudinal section of epiglottis. C. Cartilage; E. Epiglottis; F. Fat cells; G. Glands; M. Muscular Fibres.

Ossification of this cartilage does not occur, at least not in man nor in the higher animals, but, according to E. Verron, it is found ossified in birds and reptiles.

The pitting of the cartilage might explain the ragged edge presented by an ulcerated epiglottis, because the cartilage itself would longer withstand the ulcerative process than the soft parts filling the pits and perforations.

The perichondrium is closely adherent to the surface and lines the depressions and perforations. It becomes somewhat thicker as it nears the lower end of the epiglottis and finally merges into the dense fibrous band by which the organ is attached to the thyroid cartilage.

The submucous tissue which serves to connect the epithelial covering with the cartilage is differently arranged in different portions of the organ. In its anterior or glossal surface it is quite thick and loose, and is composed of fibres running around the epiglottis or transverse fibres, and of others which run from the upper edge to the base or longitudinally. Some of these longitudinal fibres run into the glosso-epiglottic fold and are of the yellow elastic type. In the meshes formed by these fibres running in different directions, we find frequently fat cells singly or in groups and the capillaries ramify freely and abundantly throughout this tissue. Near the lower end on either side of the median line a few muscular fibres are met with which belong to the thyro-ary-epiglottic muscle.

At the top and on the upper part of the posterior or laryngeal face of the organ the sub-mucous tissue is less thick and not as loose as on the anterior face, and it contains numerous glands as well as the ducts of the glands situated in the pits of the cartilage. Distinct layers of fibres, as in the anterior face, cannot be traced but they seem to run in all directions. (See Fig. 2.)

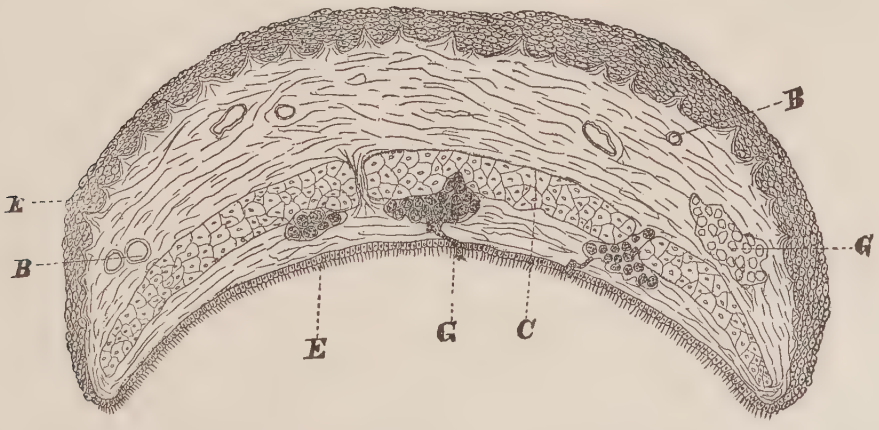


Fig. 2.—Transverse Section of Epiglottis. C. Cartilage; E. Epithelium; G. Glands and Ducts; B. Blood-vessels.

Fat cells and glands are found to be more numerous in

the lower portion than in the upper, and a sort of cushion is formed by them near the base. The ducts of the glands which are mostly racimose. are often very sinuous in their course so that it becomes very difficult to trace them to their terminations. They are lined with the ordinary glandular epithelium mounted upon a basement membrane throughout the greater part of their length, but near the outlet they are found to be lined with columnar epithelial cells; in those ducts that open near the base the cells are often found to be ciliated. The mucous membrane covering the epiglottis is very thin and consists chiefly of longitudinal elastic fibres which contain in their meshes large nucleolated nuclei. On the anterior surface we notice a waviness under the epithelial covering which seems to be the gradual fading out of the papillæ as we see them in the tongue, while at the posterior surface the mucous membrane presents an even outline to the epithelium.

The epithelium covering the mucous membrane consists, on the anterior surface, of several layers of pavement epithelial cells, and as it reaches over the upper margin and descends on the posterior surface gradually changes from pavement to columnar and ciliated epithelium. This change is first noticed near the upper margin, in the deepest layer of cells which assume a columnar shape, and as it descends the layers of pavement epithelium become fewer until finally near the protuberance or tubercle of the epiglottis we find a layer of ciliated epithelial cells. In some of the lower animals and in the human fœtus we find ciliated epithelium to reach very high up on the posterior surface of the epiglottis. About the middle of the posterior surface we find occasionally peculiar bodies embedded in the pavement epithelium, which appear to be ducts surrounded by fibres containing cells which run vertical to the surface. These "buds" were first mentioned by E. Verron,* who imagined that they might be the outlets of glandular ducts, but who was not able to verify this supposition. I have endeavored to find a connection with ducts of glands and these bodies, but have failed to do so.

*S. Stricker. Handbuch der Lehre von den Geweben. Leipzic, 1871.

The capillaries form a network in the loose, sub-mucous connective tissue of the anterior surface and send loops into the cartilage as well as into the papillary projections of the mucous membrane, while on the posterior surface they encircle the glands and their ducts and form a close network in the mucous membrane.

(*To be Continued.*)

FRACTURE OF THE CRICOID CARTILAGE BY HANGING.

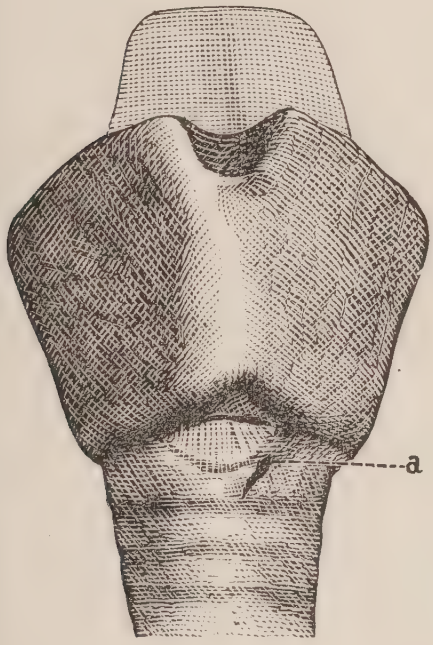
By WILLIAM PORTER, M.D.,

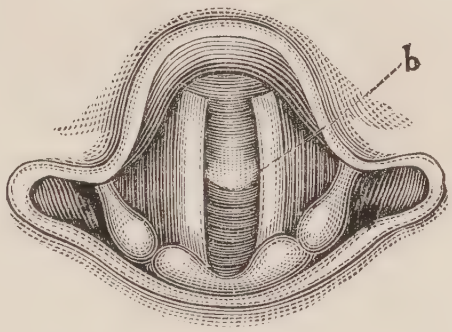
ST. LOUIS.

"FRACTURE of the larynx," it is said, "is occasionally produced by awkward hanging." (Cohen, Diseases of the Throat, 2d ed. p. 608). The accompanying cuts, engraved directly from the *post-mortem* specimen, are in proof of the truth of this assertion. On April 23, 1880, a criminal—Redemier—was executed in St. Louis, and through the courtesy of the officials in charge, I am enabled to present a few notes in regard to this interesting lesion.

Death was produced by a drop of about five feet, the rope being adjusted in the usual way, but drawn somewhat loosely about the neck. After the fall the pulse beat rapidly for a few minutes, but became almost normal within three minutes, continued so for seven minutes—then gradually diminished in frequency and force, ceasing to beat in fifteen minutes. During this time there were violent contractions of the muscles of the thorax and upper extremities, and though it was impossible to know whether there was respiration, yet there is some reason to suppose that it did occur, perhaps several times. Another criminal, executed at the same moment, died quickly from, as was afterwards determined, dislocation of the cervical vertebræ. In Redemier's case no such fortunate result was attained—he was choked to death.

The autopsy showed a dark groove—the track of the rope around the neck—crossing the larynx just below the prominence of the thyroid cartilage. Upon section, the spinal column was found intact, the blood-vessels of the brain distended, and the lungs emphysematous. The latter condition was evidently recent in places, and due to the violent death-struggle with greatly occluded respiratory tract. To me the point of greatest interest was the larynx. A faithful representation of the injury to this organ is here given. The rope rested directly over the crico-thyroid membrane and cricoid cartilage. The latter was broken (at *a*) to the left of the median line of the anterior segment, the attached membrane being pressed directly inward. By this, the larynx was almost completely closed (as seen at *b*).





The parts probably regained something of their normal position after the rope was removed, though it is not likely that the compression was so great as to entirely prevent the passage of air. There was marked ecchymosis of the laryngeal mucous membrane and considerable œdema.

A chapter like this should have a moral.—Even in hanging a man, some knowledge is required to prevent bungling and prolonged agony. The main reason why the cervical vertebræ are not always dislocated or fractured and a quick

painless death secured, is that the knot slips to the back of the neck, the head is thrown forward and the rope forms a direct line of suspension, with the spinal column, the centre of support being over the larynx. Experiments upon the lower animals led me to believe that with care this may always be avoided. The noose should be drawn tightly around the neck at the last moment, the knot being either at one side or, still better, in front. Dislocation may be further assured if a hollow wooden or leaden ball be passed over the knot close to the neck—thus forming a fulcrum to throw the spinal column out of the perpendicular line at the point of pressure. The theoretical proposition that in hanging the pressure upon the nerves, blood vessels and air-passages of the neck, produces a painless death, though the spinal cord be uninjured, is not practically true, and such specimens as this one, do not reflect favorably upon our boasted civilization.

MALIGNANT DISEASE OF THE LARYNX.
ASSOCIATED WITH CANCER OF THE BREAST.

By E. FLETCHER INGALS, M. D.,

CHICAGO.

During the summer of 1879, I was consulted by Miss A. H. a single lady about fifty years of age, who complained of dyspnœa which had been steadily increasing for about six weeks. The patient was much emaciated, suffered from cough, was nearly aphonic and believed herself the subject of phthisis.

I found that four years previously she had a cancer removed from the left breast, and that about a year later it had returned in the glands midway between the breast and axilla.

This latter tumor was stated to have attained the size of the patient's fist, and subsequently to have diminished to the size of a hen's egg under the influence of the internal use of red clover tea. When the patient began to take this remedy she was suffering from frequent lancinating pains through the tumor, and these certainly disappeared after it had been taken a few weeks.

A thorough examination of the chest revealed no signs of disease in heart or lungs.

Inspection of the larynx showed congestion with slight tumefaction of the entire inner surface, specially noticeable in the vocal cords, which were of a dull red color, and swollen to twice or thrice their natural size. Their movements seemed perfect in respiration but were sluggish in phonation.

The patient had discontinued the use of the red clover several months previously, oweing to the digestive disturbance which it occasioned; her appetite was still poor, and the stomach seemed unable to contain more than the smallest quantity; the bowels were frequently relaxed.

An effort was made at once to improve the patient's general nutrition by bitter and ferruginous tonics, but the latter were not well borne. Mild applications of chloride of zinc gr. 1¾ to 2½ to ℥ i of glycerine were made to the larynx two or three times a week for about six weeks, during which time the dyspnœa had greatly diminished and the swelling of the cords had to a considerable degree disappeared, yet the patient constantly failed in strength. About this time the patient's visits to my office ceased and a couple of weeks later I was called to see her at her house.

I found that failing strength, apparently due to increased difficulty in taking nourishment, had confined her to the house, but she had also suffered for the past few days from severe attacks of dyspnœa which to her and her friends seemed nearly fatal.

An examination of the larynx showed no material change since her last visit at my office excepting a small circular ulcer on the upper surface of the right vocal cord near its middle.

During the following night and day the patient suffered from several severe paroxysms of dyspnœa worse than those which had preceeded.

It now became evident that the spasmodic action of the glottis would soon prove fatal unless relief was obtained by tracheotomy, which was suggested as a means of prolonging life ; but one which offered no prospect of cure.

The patient eagerly grasped at anything which offered relief from the agony of suffocation.

I operated the same evening assisted by Drs. D. R. Brown, W. J. Maynard, W. E. Clark and E. Ingals. The operation was considerably prolonged by the accidental wounding of a vein and an enlarged isthmus of the thyroid gland, but the patient rallied as well as could be expected from one in her condition.

She had an attack of acute bronchitis which lasted for a couple of weeks but no other outward symptom followed the operation.

The strength began to slightly improve and the edges of the wound made a slight attempt to heal, but the improvement was only temporary.

Shortly after the operation I ordered for the patient drachm doses each of the fluid extract of red clover and arrow wood combined with moderate doses of Fowler's solution and diluted with a couple of tablespoonfuls of starch water, to be given three times a day, by enema as the stomach would not tolerate it.

When this treatment was commenced the tumor near the breast

was about the size of a hen's egg, hard and firmly attached to the skin. After four to six weeks it had diminished to about one third of its former size.

During all this time the patient had considerable difficulty in swallowing, which seemed to come from a point in the œsophagus an inch or more below the arytenoid cartilages, and partially from the larynx itself. Local applications to the ulcer were found to give considerable relief, but more or less of the dysphagia always remained.

The first satisfactory inspection which I obtained of the vocal cords after the operation, showed them in apposition and motionless on deep inspiration.

The irritation of the recurrent laryngeal nerves resulting from the cancerous growth in the œsophagus, which had formerly caused the spasm had now been followed by compression or destruction of the nerve causing paralysis.

From this time forward the disease steadily advanced, the ulceration progressing in the larynx, and later in the external wound; the dysphagia increasing; the stomach becoming less and less tolerant of food; the bowels uncontrollably loose, and the strength correspondingly failing until Thanksgiving day, about eleven weeks after the operation, when the patient left this city in a palace car for her mother's home in New York state. She bore the journey very well for one so feeble.

Shortly after reaching home the tracheal tube came out and could not be subsequently retained owing to the ulceration of the trachea.

The patient's sister wrote me that she died about three weeks after reaching her home; the immediate cause being a perforting ulcer of the œsophagus which allowed food to escape into the trachea.

The most interesting feature of this case was the undoubted change in the size of the tumor, and the subsidence of pain while she was taking red clover tea, and it certainly seems in a measure to substantiate the popular belief, that this remedy is a cure for cancer, it fails however to prove that this remedy has, or had in this case, any effect in prolonging life.

If it will relieve pain as it seems to have done in this case, it merits our careful consideration, and if can-

cerous tumors diminish in volume while it is being taken, the profession should give it a thorough test and ascertain its true worth.

Another feature of more interest is the marked improvement, for a time, due to mild topical applications, and the uniform relief which they afforded for several weeks. Strong applications were not tried, but two and a half grains to the ounce of the chloride of zinc was found to give considerable smarting which would last for several hours. The question naturally suggests itself "Shall we counsel tracheotomy in malignant disease of the larynx." If we follow out our time honored rule of prolonging life to the greatest possible extent, it would undoubtedly be adviseable, but if we follow that higher rule of "Doing to others as we would that they should do unto us," it seems to me the physician should never urge the operation. We should state the case fairly to the patient, not omitting to enumerate the discomforts which await them in a renewed lease of life, and then abide by their decision; and I think those who decide to let the disease take its course will never regret it.

CLINICAL NOTES.

A NASAL CALCULUS REMOVED FROM THE RIGHT NASAL FOSSA, WEIGHING FORTY GRAINS, HAVING FOR ITS NUCLEUS A SMALL PLEDGET OF COTTON,

By J. O. ROE, M.D.,

ROCHESTER, N. Y.

Miss E. C., æt. 22 years, was referred to me the third of last February, having a profuse and offensive discharge from the right nostril, which she supposed to be from nasal catarrh.

In the fall of 1872, while living on a farm, the right side of her face became suddenly much swollen and very painful. The pain extended to the eye, supra-orbital region, and to the right ear, but was most intense in the nasal and malar bones.

She suffered three or four days of intense pain, from which she could get no relief, but on the occurrence of a discharge from the nostril the pain at once almost completely subsided.

She had had most of the time a dull heavy pain over the right side of face and head, and a discharge from the right nostril. On taking cold the pain would become more intense, and the discharge increased.

About one year before I saw her the right nostril began to have a dilated, swollen appearance. The discharge increased very rapidly, became of a sanious muco-purulent nature, and so offensive at times as to be almost unendurable.

On examination of the right nostril with a nasal speculum, I found a substance occupying the right nasal fossa resembling in appearance a polypus, but when taken hold of with a pair of forceps it proved to be hard though movable.

Discovering at once that it was neither a polypus nor a sequestrum of bone, but a foreign body, I proceeded to remove it with

a pair of stout polypus forceps. This, however, required considerable force and dilatation of the nostril.

In the fossa surrounding the calculus were numerous granulations and a thickened ridge of tissue which formed a sort of pocket, and, together with the stone, almost completely occluded the nasal passage.

The removal of the calculus left an ulcerated surface where the stone had been imbedded. This rapidly healed after a thorough cleansing, and a few applications of a dilute solution of nitrate of silver made to the part. The discharge at the same time ceased, and the girl felt entirely relieved.

The calculus, or rhinolith, after removal weighed forty grains.

In shape it was somewhat triangular, and in appearance resembled very closely a Brazil-nut, as shown in the accompanying cut.

A. Stone entire. B. Section showing the nucleus.

It conformed to the contour of the nasal cavity, the base occupying and resting on the floor of the nasal passage. The apex or wedge-shaped edge projected into the narrow superior portion of the nostril, between the vomer and superior turbinated bone.

The exterior was quite hard and rough, presenting numerous points for the continued deposition of fresh material.

On section the nucleus resembled in appearance and shape an apple-seed, but on examination the portion corresponding to the pulp of the seed was found to be a pledget of cotton, which in some unaccountable manner, was probably forced into the nostril in 1872, and around which the deposit had become incrusted.

A qualitative chemical examination of a portion of the stone, showed it to be composed of phosphate of lime and magnesia, chloride of sodium and carbonate of lime, magnesia and soda, which corresponds with the result of Demarquay's careful and minute examination of these formations.

Remarks.—Nasal calculi are more frequently found occupying the inferior meatus, but are sometimes met with in all the differ-

ent passages of the nasal fossæ. Their position is usually determined by the direction and method of introduction of the foreign substance or nucleus. Those which have been inspired or crowded in through the anterior nasal openings are usually found occupying the anterior inferior portion of the nasal fossæ, as was found to be the case in this instance, while those which find their way in through the posterior nasal passage, as often happens in emesis or during a misdirected effort in deglutition, occupy, as a rule, the posterior superior region. Occasionally the deposit takes place under the pituitary membrane lying imbedded in the tissue beneath.

They may originate in the frontal and maxillary sinuses, and from thence pass into the nostrils.

Various causes are ascribed for their formation. Gräfe attributed their production to the influence of an arthritic dyscrasia.

But probably the most frequent cause is chronic inflammation of the nasal fossæ and the lacrymal gland, which may determine such an alteration in the secretion as to lead to calcareous deposition.

Certain anatomical conditions may also conduce to their formation, contraction of the lower meatus or closure of the nasal openings to such an extent as to hinder the due expulsion of the secretions. An example of this is reported by Dr. William H. Brown,* where the secretions became pent up by closure of the nostril by cicatricial tissue, the result of smallpox in childhood. The stone, after removal by incising the occluding membrane, weighed 3 iii ss.

Often, however, no definite nucleus can be discovered, and in such cases the cause and starting point of the calcareous formation remains obscure.

These calculi or rhinoliths, being essentially sediments of the saline portion of the serum of the blood, are composed, according to Demarquay,† of phosphates of lime and magnesia, chloride of sodium, carbonate of lime, magnesia and soda.

They vary in size from that of a small bead to that of a pigeon's egg, weighing three or four drachms. They may become so large as to obstruct the nasal passage completely, and by their pressure deflect the septum so as to obstruct or close the opposite nostril. They may be multiple or single, according to the circumstances which determine their formation.

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* *Edinburgh Med. Journal*, vol. v, p. 50.

† "Memoirs sur les calculs nasaux." *Archives générales de médicine* vol. viii, p. 174, 1875.

In color they vary from a whitish appearance to that of a gray, brown or black.

The shape of the calculi is determined by the contour of the cavity in which they are formed. They are generally uneven on the surface, sometimes nearly round, but flattened and thicker in the centre, tapering to a more or less sharpened border (as shown in the cut B).

In consistency they may be firm and very hard, or soft and friable, readily crumbling into fragments on being grasped by forceps.

In mode of formation and appearance, they bear a close relationship to calculous formations found in the bladder, and sometimes they present a similarity to mulberry calculi.*

Symptoms.—Their presence is manifested by the ordinary symptoms of irritation, with a sense of weight and fulness in the affected nostril. They are also accompanied by pain, constant or of an intermittent neuralgic character, referred to the nasal or frontal region, and sometimes affecting the whole of the same side of the head.

The sense of smell is usually more or less impaired, amounting in some cases to complete anosmia. There is usually more or less inflammation and swelling of the adjacent parts, dilatation of the nostril, and a muco-purulent or ichorous discharge, frequently of a very offensive character.

When a foreign substance becomes the nucleus for a calculus, these symptoms date from the time of the introduction, and are of a much more aggravating form than in those cases in which it arises spontaneously.

In those of an idiopathic origin these symptoms are latent at the beginning, and slowly increase as the rhinolith augments in size.

The ear may be affected, producing intense otalgia. The eye may also suffer sympathetically, producing epiphora from obstruction of the nasal duct.

The calculi are ordinarily detected by an examination with the nasal speculum or the rhinoscope ; when they are not readily seen, a careful exploration of the cavity with a probe will be necessary, and the characteristic dull, dead sound or metallic click emitted when a stone is struck, at once renders the diagnosis beyond a doubt.

* Poulet. Foreign bodies in surgery, vol. ii, p. 290, 1880

In some cases they are very obscure, and cannot be detected by the eye or felt by the probe, as when encysted or enclosed beneath the mucous membrane. They may be mistaken for a nasal polypus or tumor on account of the dilitation of the nostril and obstruction to respiration ; or, from the deformity and accompanying suppuration, for necrosis or some primary disease of the bones. A case of this kind is reported which was mistaken for necrosis of the malar bone. The calculus was a large one, and was removed by lithotrity in four sittings.*

They may be ascribed to idiopathic ozœna from the profuse discharge and its fœtid odor.

Treatment.—The removal of the calculi, which is the first thing to be done, sometimes presents difficulties. When accessible they can ordinarily be readily extracted with a scoop or a pair of common dressing or polypus forceps, as was done in this case. Great care, however, should be exercised, lest in failing to properly seize the calculus it may be forced further into the cavity.

Delicate forceps with separate blades are very convenient, as each blade can be introduced independently, as with obstetric forceps, and afterward locked together. Dr. Durham† says he has used forceps of this description for several years in extracting nasal calculi and other foreign bodies from the nose and ear. He considers such forceps invaluable for the extraction of foreign bodies through narrow passages.

In cases where the rhinolith is located beneath the mucous membrane, it becomes necessary to incise the membrane down to the stone sufficiently to allow of its extraction. Dr. Erichsen‡ mentions two cases of this kind occurring in children where the rhinoliths were as large as cherry stones

Other cases of this kind are recorded. When the calculus is sufficiently large to endanger the laceration of the soft parts in its extraction, it may be crushed with a pair of strong forceps or drilled and the debris washed out with the nasal douche, allowing the water to enter the opposite nostril, or what is preferable with the posterior nasal syringe.

Dr. Cohen recommended that "in some instances a knife be passed under the edge of the calculus a short distance into the

* *Gazette des hôpitaux.* Paris, 1859.

† Holme's Surgery, vol. iv., p. 263.

‡ Science and Art of Surgery, vol. ii., p. 390.

soft parts and the calculus be then pried out in part by a blunt instrument."*

In some instances calculi, which have remained in the nostrils causing intense neuralgic pains and suffering for years, have been expelled by the sneezing produced by the employment of sternutatories.

These formations in the nasal passages were observed as long ago as 1654 by Bartholin, who found one as large as a pigeon's egg which had formed around a cherry. He also relates a case of a Danish female who had suffered a long time with violent headaches, which were entirely relieved on voiding several calculi the size of a date. Claude mentions the case of a woman sixty years old, from whom a nasal calculus was removed the size of a hazel nut. Kearn discovered several pisiform calculi in a case with violent cephalgia.†

Demarquay cites a number of interesting cases of these formations in his work on this subject, and many others are to be found scattered through medical literature.

The treatment after the removal of these calculi consists in thoroughly cleansing the cavities and the application of such remedies as will allay the irritation and reduce any inflammatory action or thickening of the parts which may have been produced. Should they be associated with or caused by a constitutional taint such as gout, suitable remedial measures should be adopted.

I. CHOREA OF THE HYO-THYROID MUSCLES.

II. ACUTE IDIOPATHIC INFLAMMATION OF THE NORMAL THYROID GLAND.

By F. I. KNIGHT, M. D.
BOSTON.

I.

A Clergyman, 41 years of age, consulted me in November, 1879. He stated that he had been a sickly infant, but a pretty strong boy. He had never had serious illness. Ten or eleven years ago, after much preaching, he began to feel a jumping sensation in

*Diseases of the Throat and Nasal Passages, p. 391, 1879.

†Clognet, *Osphrësirlogire*, p. 627.

the throat, apparently external, which has since continued more or less, being increased by a prolonged use of the voice. On inspection of the anterior aspect of the neck, which is thin, the larynx could be seen constantly jumping upward. In the laryngeal mirror the base of the tongue at the same time could be seen to be twitched downward. There was no disordered muscular action elsewhere. On phonation the right cartilage of Santorini passed in front of the left. The phenomenon seemed undoubtedly to be due to clonic spasm of the hyo-thyroid muscles. The voice was not affected, and the disturbance had existed so long that the patient had come to disregard it, or even to be unconscious of it, except when it was exaggerated by fatigue. I advised strychnia and faradasation, the patient returned to a distant home, and I have not heard from him since. It is certainly interesting to note that the modulation of the voice in preaching was not affected by such incessant twitchings of these muscles.

II.

A farmer, 39 years old, came to me in November 1878, with the following history: He had had typhoid fever at 20, and had not enjoyed quite as good health since. In the previous May (1878) swelling with tenderness on pressure appeared in the thyroid gland, which was not before enlarged. There was high fever, and soon great pain, great dysphagia, but "not much trouble in breathing." At the end of nineteen days the suffering was so great that the patient threatened to run a knife into it himself, if no one else would. It was opened by the attending physician, and discharged from Oss—Oj pus. The patient described the tumor before being opened as being as large as the fist. His head was stretched back and neck filled out to chin. Some swelling remaining, it was opened again in a lower spot three weeks after the first time, and one ounce of pus was discharged. At the end of six weeks it was swollen again half as large as a hen's egg. After the application of pork it discharged half a teaspoonful at a time for two days. Since then there has been a little swelling at times, which has been reduced by the external application of iodine. During his sickness the patient lost forty-one pounds in weight in twenty days.

When I saw the patient there was a slight swelling, and induration of the thyroid gland remaining.

A letter from Dr. J. O. Twaddle, of Bethel, Me., the attending physician, confirmed the history given by the patient, except that Dr. T. states that there was much difficulty in breathing. His first incision was ¾ in. or more in depth. He agreed with the patient in the large amount of pus discharged, ℥ x— ℥ xvj at the time of the incision. Acute idiopathic inflammation of a healthy thyroid gland is quite rare. Lücke—Die Krankheiten der Schilddrüse, 1875—says that reports of scarcely twenty-four cases are to be found. The preceeding case is especially remarkable for the size of the abscess, and the dysphagia, which was so great, as to permit very little nourishment by the mouth, the dysphagia being usually slight compared with the dyspnoea.

AN UNUSUAL CASE OF EXTENSIVE PHAGEDENIC ULCERATION OF THE FAUCES, WITHOUT OBVIOUS EFFICIENT CAUSE.

By BEVERLEY ROBINSON, M.D.,
NEW YORK.

A. B., merchant, 38 years old, was sent to me by a professional friend on March 28th, of the present year. My patient informed me that some weeks previously, while taking a drink of whiskey and water, he felt a sudden, sharp pain in the right side of his throat. The pain persisting at the expiration of a few hours, he made use of a gargle recommended by a friend, but without sensible relief. The following morning there was redness and swelling of the tonsil and palatine folds on the right side, with somewhat augmented pain, and the appearance of a small white spot about the centre of this tumefaction.

Astringent gargles and topical applications were now employed by his physician, with the exhibition internally, of quinine and the potassic tartrate of iron. Instead of improving under this treatment, the local and general condition became rapidly worse. The right side of the fauces became more swollen, and finally the mucous membrane burst, and gave exit to a considerable quantity of pus. The cavity of this emptied abscess was subsequently washed

out daily, by means of detergent and disinfecting washes of Condy's fluid, carbolic acid solution, etc., and an ointment of iodoform (ʒ i—ℨ i) was further applied, after thorough cleansing treatment had been employed. In a few days after the abscess had opened, the borders of its cavity became ulcerated, and the whole interior of its walls assumed a dirty, gray-yellowish aspect, which was obviously due to the deposit of a thick, fibrinous layer. The margins of the ulceration became serpiginous and its border line grew in extent each day. The devouring process also, progressed very rapidly in the direction of the large vessels of the neck. The patient's general condition was more and more markedly influenced. Each successive day he became more nervous and anxious; his pulse was rapid and weak, his appetite lost, and his face pale and covered with perspiration. When I first saw him he had great pain during deglutition, and could only swallow semi-fluid substances. The ulcerative action had become already very considerable, and implicated the palatine folds, tonsil, uvula, and a portion of the soft palate on the right side. All of these parts were to a large extent destroyed, and the ulceration had an angry aspect on its borders and an ichorous coloration of its fundus, which plainly showed that it was still of progressive tendency. I questioned my patient very closely as to an efficient cause of this condition, and found none other except that he had been somewhat run down by overwork. He denied absolutely all symptoms and history of specific infection and the most rigid physical examination revealed absolutely nothing of a characteristic nature to make me throw any doubt upon the truth of his assertion. There was no history past, or present, which showed the slightest scrofulous diathesis. Upon four successive days I cauterized the entire ulcerated surface with nitric acid, but even with this powerful agent, was unable to arrest the march of the disease completely. I then put my patient on the mixed treatment employed in constitutional syphilis, and within the lapse of thirty-six hours noticed slight improvement. During the following two weeks he improved steadily, and what with repeated cauterizations and the daily use of a carbolic spray and of powdered iodoform blown into all the sinuses of the tortuous cavity, he is now apparently cured, (April 26th).

The morbid manifestations have entirely disappeared, and the distortion left by the ulceration is so slight, that he is not even incommoded by it.

Remarks.—This is the first example of possible *simple* phagedenic sore throat I have yet met with, and the question naturally

arises, should the results of treatment by specific remedies render its existence uncertain? We must wait and watch for future developments in the case, so as to give more than a doubtful answer.

The cauterizations with the mineral acid were found to be only moderately painful, and could not be compared with the distress caused by pure lemon juice with which I made one application. My patient's general health is certainly much improved since he commenced to take small doses of mercury combined with iodide of potash. The great risk in my case was from ulceration of the carotid. Fortunately this dread accident did not occur, although when first seen by me, I deemed it probable.

HERPES PHARYNGIS.

By WILLIAM C. GLASGOW,

ST. LOUIS.

A young lady, aged 20, consulted me on account of soreness of the throat and a patch of exudation which she had noticed on her tonsils. She thought that she had taken cold a few days before from exposure to inclement weather.

She complained of pain in swallowing and a general stiffness of the throat.

The pulse was slightly accelerated, and the temperature 98½° F. There was no enlargement of the glands, nor any marked depression of the vital powers.

An examination of the fauces showed each tonsil slightly swollen, and covered by a patch of exudation. This could be easily removed without leaving an erosion.

The second day the entire upper part of the pharynx was covered by a similar exudation, which also extended upward, spreading over a portion of the posterior surface of the soft palate, and clothing one-half of the uvula with a membranous film.

The exudation was of a yellowish white color, and seemed pultaceous in character. A portion of the uvula appeared as if covered by a thin semi-transparent membrane.

The exudation on the pharyngeal wall was quite adhesive, but portions could easily be rubbed off after a solution of iron had been applied.

The greater part of the mucous membrane from which the exudation had been removed, presented a delicate, rosy appearance, as of newly-formed tissue, or as if the surface were covered, so to speak, by unripe epithelium. In three different spots, however, the exudation could only be removed by forcible rubbing, and a bleeding, excoriated surface was seen.

The membrane reformed daily, gradually diminishing in extent during the second week, the portion covering the excoriated spots being the last to disappear.

During the whole attack there was no marked constitutional symptoms with the exception of a slight feeling of debility. Pain on swallowing continued up to the disappearance of the erosions. The temperature was never over 99° F., or the pulse over 80.

There were no signs of a herpetic eruption either on the lips or on other portions of the buccal cavity.

The patient recovered completely, and has since then been in perfect health.

PERI-LARYNGEAL ABSCESS. OPERATION. CURE.

By WM. F. DUNCAN, M.D.

NEW YORK.

March 14, 1879. I was called to see Hon. H. G., who was said to be suffering with a sore throat. I found the gentleman in his library dressed and engaged in writing. He stated that his larynx felt a little sore and had been uncomfortable for four or five days. His voice was slightly husky and there was an enormous swelling, of stony hardness, of the glands of the neck on the left side, extending from below the ear nearly to the clavicle. It was painless. There had been no chill, but a slight fever, pulse about 90 and a coated tongue. The pharynx was somewhat reddened and with the laryngscope a moderate catarrhal laryngitis without any swelling or œdema was seen. I directed the external swelling to be painted with Tr. iodine, after which lead

and opium wash was to be used. Fleming's Tr. Aconit. was given internally and the steam from hot hops was inhaled. The patient also took a Dover's powder at bed-time.

15th. The symptoms much worse. Fever, cough and slight dyspnœa due to œdema of the left ary-epiglottic fold in the early morning. By evening the œdema had increased so much that the dyspnœa was very marked. There was also swelling of the tissues of the pyriform sinus. Scarification with the laryngeal knife was done and constant steaming with a weak solution of tannin was advised. Quinine and iron were given internally.

It was thought that tracheotomy would be required in the night and all preparations were made for it. Dr. G., a brother of the patient, remained with him until morning, when the œdema, which had been largely removed by the scarification, reappeared, but only to a small extent. There was no throbbing of the external tumor, but it had slightly increased in size so as nearly to prevent opening the mouth. Five days passed in which the condition seemed the same, but on the sixth day hectic chills, fever and sweating appeared ; at the same time a tumor developed in the pyriform sinus, round, red and shiny, and large as a black walnut. I at once punctured this with the laryngeal knife and let out considerable pus and blood. Relief of the local and general symptoms at once occurred and the fever nearly disappeared, the temperature falling to 99.5° F.

The following day the hectic returned and the temperature rose to 105°. The chills were frequent and the sweating so copious as to soak the bedding. Pus was still flowing from the internal wound. The indications were that there was somewhere concealed pus. The easiest course for it to take was downward through the pyriform sinus alongside of the trachea.

The skin of the neck was stained with iodine so that no redness could be seen externally and the whole tumor was still hard and brawny. Without positive indications of the presence of pus in that location, I determined to cut for it. I made an incision in the median line of the neck downward for an inch and a half from the cricoid ring, cutting only through the skin. Then with a probe pushing outside the tissues, I reached the left side of the windpipe when at once the pus welled up in a stream. The hectic entirely disappeared the next day.

There was still occasion to fear that pus might burrow in other directions and make further danger, but frequent prob-

ing and syringing with carbolized water brought it all away through the opening. An oakum tent, kept in the wound, was covered with balsam of peru. In ten days the gentleman was able to visit my office, when I could still pass a probe upward through the sinus until it reached the counter opening in the pyriform fossa. After a few days the discharge disappeared and the wound was drawn together and allowed to heal. It was premature, however, and had to be reopened with a probe in two days as the hectic returned. The wound was then kept open till May 14th—just two months from the beginning of the disease. The patient soon regained his usual health, which was that of a very robust man.

EXCESSIVE ELONGATION OF THE UVULA.

D. N. RANKIN, M. D.,

ALLEGHANY, PA.

On December 24, 1879, Mr. J. C., æt. 24, farmer, family record good, presented himself at my office, by the advice of his family physician, with the following history : For the past two years, he had been under treatment for a chronic cough, with no expectoration, but without any relief whatever ; had frequent attacks of a sense of suffocation, especially upon lying down.

Careful examination revealed no disease in the larynx or bronchiæ. Upon examination of the throat, I at once discovered the cause of the trouble—the uvula had grown to an immense size, and so much elongated that he could take it between his teeth.

After its removal, I found by actual measurement that it was over four inches in length, and at its lower extremity there was a knob the size of a large hazelnut, which terminal enlargement, I presume, had been of great importance to the man, for it was too large to pass through the glottis, thereby preventing frequent attacks of strangulation.

A CASE OF LUXATION OF THE LEFT CORNUA OF THE HYOID BONE.

By W. H. DALY, M.D.,
PITTSBURGH, PA.

On the evening of April 20, 1880, I was consulted by Doctor C. D. A., of Hartford, Conn., a physician of high standing whom I had not known previously except by reputation. The patient stated that he had sought me for the relief of a luxation of the left cornua of the hyoid bone, which had occurred about a half hour before while laughing.

Having some doubt in my own mind about the diagnosis, I made a careful laryngoscopic examination, and found internally no lesion to account for the symptoms present, which were as follows:

Position of head bent a little forward and to the left side, straightening it up caused a dull pricking pain in a spot which the patient covered with his index finger, over the seat of the left cornua.

Speech clearly articulated, but indulged in with rather more physical caution than usual.

Without further examination, and relying upon the patient's own professional intelligence in the diagnosis of his own case, he having suffered repeatedly from this rare form of luxation. Indeed, he had suffered so frequently, as to cause his wife to often caution him with much anxiety, when laughing or yawning, to "take care lest he should put his neck out of joint again." I at once set about my manipulation in the following manner. Grasping the throat firmly below the os hyoides, with the thumb and index finger of my right hand, steadying his head with my left, I directed the patient to swallow vigorously. At the same moment compressing and retracting the parts between my thumb and finger, then quickly releasing them. After the third effort the patient suddenly declared that he was all right again, and as a proof moved his head rapidly in all directions with ease and comfort, and called for a glass of water to drink.

This is a very rare form of luxation. Cohen in his comprehensive work quotes Valsalva as having described the injury to be attended with difficulty in swallowing fluids or solids. (Dysphagia Valsalviana.) This symptom was present in this case in a marked

degree, and the patient tested the certainty of his relief by asking for a glass of water to drink.

He had on former occasions relied upon irregular manipulations for the restoration of the bone, but upon no occasion before was relief ever given so promptly, therefore the simple method resorted to may also be entitled to the credit of being efficient, and at least worthy of further trial.

TRANSACTIONS OF SOCIETIES.

Boston Society for Medical Observation.

Meeting, November 3, 1879.

Discussion on tracheotomy by Drs. Bradford, Warren, Martin, Curtis, Porter, Gay, Buckingham, and Edes.

Dr. E. H. Bradford reported three cases in order, as he stated, to elicit discussion on the following questions :

1. Is it desirable in performing tracheotomy for croup or diphtheria in children to operate below the thyroid isthmus, or as high as is practicable ?

2. Is there any advantage in operating with the head hanging ? (Rose's position).

3. Is there any advantage in Dr. Martin's method (without tubes) ?

4. Is there any advantage in using soft tubes ?

5. Is there any advantage after tracheotomy in filling the room with moistened air.

Case 1.—A delicate girl 7½ years old, was seized with croup, after a week's prodromata of a rather indefinite character. There were no croupous patches upon the fauces, the breathing was extremely labored, cyanosis became marked, and tracheotomy was performed with the assistance of Dr. George Stedman and Dr. T. M. Rotch.

The parts were quite vascular, but no trouble was encountered in cutting down to the trachea—a few veins were tied and the wound appeared tolerably dry. On inserting the knife, however, into the trachea, the blood welled up very profusely, obscuring

the view so that some difficulty was encountered in inserting the dilators into the hole in the trachea. This was finally done, mainly with the help of Dr. Stedman, and the patient began immediately to breathe easily and the hemorrhage stopped as soon as the venous congestion was relieved.

The intention was to open the trachea just below the isthmus of the thyroid body. This, however, was found to be small and was cut across—causing no particular trouble.

The hemorrhage, on entering the knife into the trachea, was quite considerable and very troublesome.

I explained this only on the supposition that the trachea had not been dissected as freely from the vascular tissue above it as was supposed, although the rings of the trachea were recognized before the incision into it was made.

There was a good deal of congestion owing to the obstruction of the respiration, and parts not usually vascular were extremely so.

The patient passed a comfortable night, but the next day there was swelling around the incision, this spread on to the chest, a slight erysipelatous blush then appeared, first around the wound. This gradually extended to the face and even as high as the left eye. The incision was quite sloughy, none of the stitches adhered. The child, however, took milk freely and did not vomit. On the eighth day the tube was removed. The blush had begun to recede. The incised wound looked very badly ; there were no granulations and the skin around the edges was undermined for half an inch and thick tenacious pus could be pressed out. There was no tendency of the parts to fall into their natural places ; the tracheal opening gaped so that the little finger could be placed on the back wall of the trachea. The discharges from the wound mixed with blood would dry in the trachea and the child cough up casts of the trachea an inch or so in length. These were removed sometimes from the trachea with forceps. The liquid which the child attempted to swallow came through the larynx and out through the tracheal opening. For a few days it was necessary to feed her by an enema of beef-tea and brandy. She, however, soon became able to swallow solid food, and gradually learned to swallow liquids—but little coming out of the tracheal opening.

The wound gradually closed, but it was not until twenty-five days after the operation that it was entirely healed. The patient was seen a year after the operation and was perfectly well.

But one piece of membrane was coughed up after the tracheotomy. This was characteristic and established the correctness of the diagnosis.

Case 2.—A healthy boy, four years old, was seized suddenly with a sore throat and few other symptoms pointing to croup. Two patches on the fauces were seen. On the following morning the breathing, which had been labored, became more so and tracheotomy was advised. The operation was delayed a few hours, in order to obtain assistance; but in this time the child was found to have become very much worse, was cyanotic and unconscious. The veins were enormously distended, and on the first incision the bleeding was quite free. Attempts were made to pick up the vessels after reaching the trachea, before incising it, and a few were tied, but the child stopped breathing. As it seemed necessary to give the patient air immediately and apply artificial respiration, the knife was put into the trachea, although the bleeding had not stopped, and there was more or less blood in the wound. The trachea was opened and a dilator inserted, but the tube could not be placed in position. It was found that the dilator had been placed but partly in the tracheal incision, and that in dilating one branch had escaped,—a fact not recognized on account of the blood, consequently an attempt to dilate had resulted in pushing the trachea to one side and tearing a hole in the tissues at the side of the trachea.

The trachea was then seized between the thumb and forefinger and lifted from the bottom of the wound, (as I have done in performing the operation on dogs), the incision in the trachea enlarged and the tube inserted.

A good deal of blood was drawn into the trachea, and after the tube was inserted the child seemed moribund, but after employing artificial respiration for a short time, he recovered well and breathed quietly and naturally for over twelve hours when the breathing again became labored. The tube was removed and reinserted by Dr. Garland, who was of great assistance during the operation and in taking charge of the child. The breathing became again natural until one-half hour later when, while the child was sitting playing in the attendant's lap, the respiration suddenly stopped, and the child became asphyxiated. The tube was immediately removed, the child placed with the head hanging down, and a large piece of clot pulled with long forceps from the trachea near its bifurcation. The child again rallied and slept the re-

maining part of the night quietly. On the next day, however, he became gradually weaker. No obstruction could be discovered in the trachea, but cyanosis was marked. An examition of the lungs gave a few râles, but no dullness or bronchial respiration.

The patient died a few hours later, twenty-four hours after the tracheotomy.

The trachea was opened in this case below the thyroid isthmus.

Case 3.—A delicate child, 4 years old, a patient at the Children's Hospital for hip disease, was attacked with croup. On the following day the patient was worse and tracheotomy was performed, Dr. Whitney, and W. S. Bigelow being present, and Mr. Coe assisting.

The child was placed in the Rose position, (with the head hanging down over the edge of the table), and the operation performed in this position. The trachea was opened above the thyroid isthmus, which was drawn downward. There was almost no bleeding. Dr. Martin's method of stitching the trachea to the skin and fastening the edge of the skin to adhesive plasters applied to the neck and shoulders, was tried. This worked satisfactorily for a while, but it was later found that the child in moving about would frequently place its head in such a position that breathing became more labored. A tracheotomy tube was therefore inserted. The child breathed very quietly.

For the next two days the child remained comfortable, but on the following night began to cough a great deal, and cyanosis was marked six days after the operation. Dullness was discovered by Dr. Whitney at the base of the left lung, and fine moist râles at the end of inspiration. The next day the child died.

The child was subjected to a bungling operation, an unnecessary amount of blood was lost and a considerable quantity drawn into the bronchi and bronchioles.

This in all probability excited a capillary bronchitis, or aggravated it if already existing.

A comparison of Case 2 with Case 3 shows, as it seems to me, the difference of the clinical course after tracheotomy, between a case in which the operation was badly done, and one in which no blood was drawn into the trachea.

Under the circumstances, I think it would have been better surgery after finding, on cutting down upon the trachea, that the hemorrhage was profuse, to have incised the crico-thyroid

membrane, and then cut through the cricoid cartilage for a sufficient amount of room.

In Case 1 and 2 the trachea was opened below the isthmus of the thyroid body.

This was done in deference to an opinion that it is desirable to make the tracheal opening in tracheotomy for croup as low as is practicable, for the reason that the lower the opening the better the chance the child has to escape the obstruction of the membrane if it extends downward.

I think, however, this opinion is not based substantially upon facts. Children die after tracheotomy for croup or diphtheria, either from exhaustion or blood poisoning, from accidental suffocation, or from a lung complication, (capillary bronchitis, lobular or lobar pneumonia).

The chances of death from any of these causes are not made greater by the place at which the trachea is opened unless we suppose that the danger of sudden suffocation may be so increased. This supposition seems rather fanciful, and if proper attention is paid to the case, this danger may be considered as done away with.

On the other hand, the danger from capillary bronchitis or lobular pneumonia, is much greater if blood escape in any quantity into the trachea than if the operation be dry. In Billroth's first case of extirpation of the larynx, the patient nearly died from the pneumonia caused by blood which fell into the trachea. In delicate children, this danger would of course be at a maximum.

The operation, it seems to me, should be done as neatly and quickly as possible, and in a difficult case this can be most readily done if the trachea is incised as high as possible. Laryngotomy or crico-thyrotomy in children is out of the question, as the larynx is too small to admit a sufficiently large opening, but the trachea should be opened immediately below the cricoid cartilage, and in case the thyroid isthmus lies near this point, it should be pulled down by means of a hook, and if necessary to give enough room, the cricoid cartilage should be incised.

In nearly all cases the low operation can be performed without difficulty, particularly if the operator be skillful and experienced; but certain cases occasionally are met with, when even in the hands of men of experience disastrous accidents occur.

The entrance of blood into the trachea can be prevented by operating with the head hanging down, in the position first recom-

mended by Rose. This was tried in Case 3. With the exception of slight awkwardness at first in operating up side down, there was no difficulty in performing the operation.

It has been claimed that this position is unnecessary in tracheotomy. It certainly is in operating upon adults, but in operating upon children in croup or diphtheria, if venous congestion is marked, the precaution seems to me a proper one.

It is also desirable that there be as little irritation about the wound as possible, in order that there be as little suppuration, and that as small an amount as possible of discharge enter the trachea and bronchi.

The discharges in Case 1 caused, on drying, crusts and complete casts in the trachea, similar to what was seen in a case reported by Dr. J. G. Blake before this Society two years ago. In Case 3 the irritation caused by the tracheotomy tube was evident. This could have been perhaps diminished by using the soft tubes, but I was unable to find any.

In Case 3 the method recommended by Dr. Martin was tried. "Tracheotomy without tubes." The method promised to be quite successful. The breathing when the trachea was stitched to the skin and the skin properly fastened by adhesive plasters, was remarkably easy. After a while the child became restless, and, although the rubber adhesive plaster remained perfectly adherent, the child would by turning its head occasionally come into certain positions in which breathing was quite labored. A tracheotomy tube was therefore put in as it did not seem to be entirely safe without it. Suffocation would not have occurred without the tube, but as the child was found to breathe more easily in all positions with the tube, it was kept in.

As this is my only experience with the method proposed by Dr. Martin, I am unable to form an opinion how much was due to an incomplete carrying out of the method. The directions given by Dr. Martin, in his article on the subject, were, however carried out. The stitches uniting the trachea to the skin were tied firmly, and the skin stitched to the plasters and pulled as far as possible. The plasters were applied around the neck on each side and on the opposite shoulder. There was no slipping of the plaster. The interruption of the easy breathing only occurred when the child's head was placed in certain positions, turned to either side.

After watching the child, I explained the fact as follows :

The incised trachea was stitched to the skin on both sides, and the skin flaps were held away from each other as far as possible by adhesive plaster applied to the head, back and shoulders. The trachea lying near the centre of motion does not turn noticeably when the head is twisted from side to side. The skin, however, attached to the chin, which may be regarded as on the circumference of the circle of motion, does slide to a certain extent on extreme rotation of the head.

If it were possible to fix securely the skin flaps to which the trachea is stitched, turning the head in one direction would of course increase the strain in the opposite direction, and the wound would gape all the more. But in the case reported, the skin of the neck and shoulders did not seem to furnish a firm point of resistance. When the head was turned, the tension on the side from which the head was turned was increased ; the skin of the neck and shoulders to which the plaster was applied slid to a sufficient extent to allow the skin flap to which the trachea was stitched to partially cover the tracheal opening.

This, with the relaxation of the strain upon the opposite side, caused the tracheal opening to be so small that the patient in certain positions did not breathe with comfort.

The plan of dispensing with the tracheotomy tube presents certain manifest advantages, and in another case I should endeavor to arrange the plaster in such a way as to prevent sliding of the skin, but in the case reported I was unable to do so.

After tracheotomy in Case 1 the room was kept for several days filled with steam. In Cases 2 and 3 this was not done so efficiently, as it seemed that the chief danger to the children lay in the direction of lobular pneumonia or bronchitis, and the indications which case required to be met, were that the room be not very hot, and that the air be as fresh as possible. The air entering the trachea in Case 3 was made moist by laying over the tracheal wound gauze moistened in a weak solution of thymol in water.

Case 1 illustrates the necessity of carefully securing all bleeding points and clearing the trachea before incising it.

Case 2 is an example of the tracheotomy as it should not be done. The operation was delayed too long, and when performed, was performed in a manner which materially diminished the patient's chances of recovery.

Dr. J. C. Warren.—I am in favor of the high operation. It is to be remembered that the tube reaches some distance below

the opening, and, apart from the difficulty in getting into the trachea low down, the proximity of the opening to the lungs exposes them to greater danger. The high operation is easier and quicker, but, on the other hand, the opening may be too high, and in the event of recovery, distortion of the rima glottidis may result from cicatrization. I have never tried Dr. Martin's method, and ask that gentleman for information in regard to it.

Dr. H. A. MARTIN.—I have described the operation very fully and enumerated its advantages in my paper before the American Medical Association, and to that paper (*Trans. Am. Med. Assoc.*, 1878), I refer gentlemen for full details My first application of the method was compulsory or accidental. I was called from home to see a child without having been informed of the nature of the case, and found it with croup, nearly dead from asphyxia. My previous experience with tracheotomy had nearly decided me to refuse to perform the operation again, but I mentioned the possibility of relief thus held out to the mother who begged me to operate. The child meanwhile was lying in the arms of its grandfather, and stopped breathing. I took a lancet from my pocket, opened the trachea, and passed some silver wire which I happened to have through the edges of the tracheal wound. The ends of the wires were fastened to an old elastic garter of the mother, which was passed round the back of the neck, and kept the wound open. In half an hour the child was breathing quietly, and after two or three hours I felt that I could leave. The child lived about forty hours, and impressed me very much with the advantages of the method. When a fragment of membrane appeared at the opening it was easily removed, and the very tenacious mucus which is so often found in these cases, and is so apt to clog a tube, gave very little trouble. I have performed the operation in this manner ten times, and think that cases thus managed do very much better than those with a tube. I now dispense with the elastic band, which keeps up traction on the stitches, and tends to make them cut through, but use strips of india-rubber plaster. These straps should be carried not only round the neck, but even as far as the acromion process of the opposite side. I do not think it desirable to stretch the edges of the wound apart, as Dr. Bradford appears to have done in his case. I have never observed any such difficulty in breathing as Dr. Bradford describes, in any of my cases, and do not hesitate to leave a patient thus operated on

for hours, although I should never venture to do so, when a tube is used. Of my ten cases five were cases of croup, and five of diphtheria. All of the latter died, but of the former two are now living, though all were very bad cases. [Dr. Martin here read a letter from Dr. A. C. Post, of New York, speaking very highly of his experience of Dr. M's method in one case]. I consider the practice of attempting to fill the room with steam as very absurd. Everybody connected with the case is thrown into profuse diaphoresis, and is, consequently, exposed to taking cold. All that can be done by any amount of steam is to moisten the tracheal wound, and it is very debilitating. But, recognizing the advantages of moist air in inflammatory affections of the respiratory organs, I am in the habit of cutting coarse sponge into strips, moistening them with hot water, and laying them over the wound. The air is thus moistened and warmed, and the sponge serves also as a receptacle for mucous or other discharge and can be renewed as often as is desired.

Dr. T. B. Curtis.—While Interne at the Children's Hospital in Paris, I saw a good deal of tracheotomy. The rule there is to begin the incision at the cricoid cartilage, and carry it in the median line as far as may be necessary to admit the canula. The incision in the trachea is usually about $\frac{3}{5}$ inch in length. I operated once on a patient of Roger, who held the head and insisted on my prolonging the incision downward. Profuse hemorrhage followed, which ceased after the tube was inserted, but the child died of secondary hemorrhage during the night three days later. It happened, curiously enough, that another child died in the same ward the same night also from secondary hemorrhage after tracheotomy three weeks before. In this case, however, the source of the bleeding was the subclavian artery. In the first attempts to insert the tube a false passage was made in front of the trachea, and the artery became involved in the subsequent inflammation. The canula is a good hæmostatic and a double canula makes the care of the child much easier. The curve should not be too large, the extremity should be cut off obliquely as suggested by Barthez, and it should be as large as can be comfortably worn, and furnished with a movable plate as devised by Lüer. I hope surgeons will not discard the use of the tube. To secure moisture a layer or two of muslin is quite sufficient.

Dr. Martin.—I advocate my method especially for the country practitioner, who has no museum of tubes, and no trained assistants, and cannot spend his whole time with one patient.

Dr. C. B. Porter.—The most important thing in tracheotomy is to get into the trachea, but the point of election is as high as may be. The left innominate vein crosses just behind the notch of the sternum, but when engorged with blood rises decidedly above this point and is undoubtedly a source of fatal hemorrhage. The isthmus of the thyroid is a surgical bugbear, and I have repeatedly torn it with a director. If cut, however, it is apt to bleed. Theoretically Rose's position is very bad for tracheotomy, and I have seen marked oozing from the veins in other operations done in this position, cease as soon as the head was raised. I always take a gum elastic catheter with me with which to free the trachea from blood and mucus if necessary. After operation I always put a piece of moistened gauze over the tube and try to keep the bedclothes well up under the chin, so that the animal heat may warm the air before it passes into the lung. I am no more in favor of steam than the gentlemen who have spoken before me. A tube rarely requires more space than can be obtained by cutting two rings of the trachea. I do not think it fair to criticize an operation which I have never seen, but a large wound seems necessary with Dr. Martin's method.

Dr. Martin.—Such has not been my experience.

Dr. G. W. Gay.—In the worst case of hemorrhage after tracheotomy I ever saw, the blood seemed to come from the inside of the trachea. The case was one of syphilitic disease of the larynx operated on by Dr. Thorndike at the City Hospital. The wound was perfectly dry before the trachea was opened, and then occurred a great gush of blood. I have seen this occur once or twice since. In private practice I do not use steam, but apply moistened gauze or sponge over the tube.

There is a set of soft rubber tracheotomy tubes at the City Hospital, none of which have, as yet, ever been used, and I should hope that no one would be rash enough to try them.

(In reply to Dr. Porter) I suppose that the hemorrhage in the cases referred to came from the highly congested or inflamed mucous membrane of the trachea. I am positively certain that it did not come from vessels outside the windpipe for the following reasons: The trachea was freely exposed before being laid open; the incision was made from below upward; the extremities of the wound were under pressure; and the blood, mixed with air, flowed from the tracheal opening in too large quantities

and too rapidly to be explained in any other way than that it came from the inside of the trachea itself.

Dr. PORTER.—I have also seen hemorrhage take place as described by Dr. Gay, but have always found that it came from a vein at the upper or lower part of the wound, which was opened in cutting through the trachea, and cannot help thinking that this was the real source of the hemorrhage in the cases alluded to by Dr. Gray.

Dr. E. H. BUCKINGHAM.—I have met similar hemorrhage in a case operated on by me.

Dr. MARTIN.—I have seen two cases in which I was satisfied that the tracheal mucous membrane was the source of the bleeding.

Dr. CURTIS.—I am induced by some remarks of a previous speaker to express my opinion that there is ordinarily no occasion for great haste in the performance of the operation, and the chief cause of success is in operating early—at the inception of asphyxia rather than at its highest point. I have had four recoveries out of eight operations. Dr. Revilliod, of Geneva, had thirty-seven out of eighty-seven. Tracheotomy with a tube, even if double, certainly does require the constant presence of a trustworthy and experienced person.

Dr. WARREN.—The simpler a tube can be made the better. I have had some made for my own use without a movable shield. I have found that the difficulties caused by the tenacious mucus, which may dry on the tube, and render it very hard to clean, are entirely obviated by dipping the main tube in some very fine oil such as is used for watches. I consider it very important to remove the whole tube every day to examine the condition of the wound and instrument, and ascertain whether the patient can breathe through the mouth. In regard to the period in the disease at which it is best to operate, I am inclined to differ from Dr. Curtis. In croup or diphtheria it is a very serious operation. Children bear wounds well when in a state of health, but in this disease, in which their little bodies are under the depressing influence of a poison, I am not in favor of operating unless it is absolutely necessary,—or, in other words, unless it is clear that the only chance for life lies in an operation.

Dr. CURTIS.—It is precisely for the purpose of giving the child a better chance that I favor an early operation. As soon as laryngostenosis appears nothing is to be gained by waiting, but much may

be lost. [Drs. Porter and Gay coincided with Dr. Curtis on this point].

Dr. MARTIN.—I am a non-believer in the identity of croup and diphtheria, and I have never seen a case which I called diphtheria recover after tracheotomy. For this reason I never advise an op eration in these cases, though I never refuse to perform it if desired by the family.

Dr. PORTER.—I must protest against the absolutely fatal prognosis of Dr. Martin. I have saved two unquestioned cases of diphtheria by tracheotomy.

Dr. GAY.—I would advise and do the operation in most cases attended by great dyspnœa, even if there is no reasonable hope of recovery. I would do it under these circumstances merely for the great relief to be expected from it, just as I would give opium in cancerous or any other painful but fatal disease.

Dr. R. T. EDES.—I have here the respiratory organs, removed this morning, of a child on whom I performed tracheotomy three days ago. The false membrane extends down into the bronchi of the second or third division and a less consistent exudation further still.

This extension is, in my experience, the most common cause of death.

I cannot agree with the opinion that the membrane never reforms in croup after tracheotomy. I have seen a case in which it reformed at one bifurcation of the bronchi in eight and a half hours, as was clearly shown by the successive appearance of membranous casts from this locality. At the autopsy the whole bronchial membrane from the glottis to the smallest bronchioles which could be opened with the scissors, was lined with pseudo-membranous exudation making at least three formations.

REVIEWS AND BOOK NOTICES.

Treatise on Orthophony. Normal Voice; Stammering and Stuttering; Vicious Articulation; Esthetic Tones; Physiognomony. By E. COLOMBAT, Professor of Orthophonics at the National Institute for Deaf-Mutes in Paris, etc., etc. Paris, 1880, Asseline et Cie, 8vo., pp. 576.

This bulky treatise, which includes a good deal of matter irrelevant to the subject, is from the pen of the son of the well-known Dr. Colombat of Isère, whose record of investigations into the causes and systematic correction of defects of speech has been a classic on that branch, so to speak, for a little more than half a century. The outcome of the studies and observations of the father are extended and supplemented by the labors of the son, in the same department; and we are presented with a detailed scientific summary of the combined results, entitled to the careful study of those engaged in legitimate methods of remedying defects of articulation.

The volume is divided into a number of sections of variable length, arranged alphabetically as notes and appendices to notes, instead of chapters.

To confine our notices to those portions of more especial interest to laryngologists, we find stammering and stuttering correctly viewed as an infirmity of nervous origin; involuntary but disciplinable; and having its cause in the final phase of the psycho-physiologic evolution of subjective speech. The affliction then, being neither a disease nor due to any anatomical defect, its correction properly lies within the sphere of a special teacher who has mastered the anatomy and physiology of the organs of respiration, phonation and articulation; and it is not thoroughly reached by the ordinary physician on the one hand, or the ordinary teacher of elocution on the other. This is the view sub-

stantially held by our author. He gives, too, indications for a variety of rhythmic exercises for the organs of respiration and speech, subject to modification with each subject, as no two are affected exactly alike. The *note de resistance* of the volume is Note O, of 209 pages, entitled Synthèse Orthophonique, and followed by two appendices, of 32 additional pages, on the precepts and complemental methods of orthophonics and prophylactic phonetics, and on nasal and buccal inspiration and expiration, and their different physiological evolutions.

There is a very fair description of the anatomy of the larynx and the muscles by which it is held in connection with other parts of the body, and its vascular and nervous supply, followed by quite a long description of the tongue, to which it is fairly entitled as an important factor in articulation. The author's views on the physiology of the voice and its various modifications are not in full accord with those of physiologists and laryngologists in general. It is agreeable to find him denying similitude of the vocal organ to that of any musical instrument, and insisting that it "resembles nothing but a larynx ; a wind-instrument *sui generis*, inimitable by art, the living mechanism of which cannot be compared to the mechanism of any other."

The views expressed as to the mechanism of the so-called falsetto voice are peculiar, and originated with the elder Colombat. In the first place the term *falsetto* is discarded as conveying a false impression, as of a false sound ; and the term *fauçet* is substituted to indicate that its mechanism takes place in the fauces, where the author improperly locates it. To quote the author—in the production of the upper register of the voice, to which the name head-voice, or faucet, is usually given, "the vocal instrument, elevated by contractions of the thyro-hyoid, genio-hyoid, mylo-hyoid, stylo-hyoid, digastric, genio-glossal, hyo-glossal, and the inferior constrictor muscles of the pharynx, is restrained by the lateral hyo-thyroids, the oblique and transverse hyo-arytenoids, and the inferior and superior thyro-arytenoids. At the same time the pharynx contracts and narrows, the soft palate is drawn from the vertical direction to a horizontal one, so that its anterior surface now becomes inferior, and it is rendered tense to occlude the pharyngeal orifices of the nasal passages ; and the posterior pillars approach to such an extent as to form a sort of glottis or elliptic slit. The uvula, which retreats more and more as the first tones of the faucet pass into the acuter ones, becomes

finally effaced altogether when the summit of acuity is reached. The tongue becomes very convex, elevated and strongly contracted, especially at its base. The tonsils become considerably engorged, and approximate each other so as to narrow the isthmus of the fauces. Finally, the epiglottis, compressed like a cornet, directs the air, which escapes from the glottis in a thin stream, toward the elliptic slit or *superior glottis*, formed, as has been stated, by the approximation of the posterior pillars of the palate and the exaggerated contraction of all the parts concerned. The supra-laryngeal sounds which result from this mechanism no longer escape in part by the nose, as in the notes of the first register, but they resound solely in the mouth, after having been produced by the impact of the air against the lips of the new glottis formed by the approximation of the posterior pillars. These pillars are susceptible of vibrations even more evident than those of the vocal cords themselves, which may be compared to the labial vibrations in whistling, and in imitating with the lips the sounds of the horn, the basson, the rattle of a bow upon the strings of a violincello, or the noise produced by the wings of a fly, a bee, and all the coleopteric insects."

That this view is altogether artificial is sufficiently evident to all who have watched the mechanism of the head-voice with the laryngoscopic mirror. The very presence of the mirror in the mouth prevents the formation of the artificial glottis to which the tones are attributed by Colombat. The muscular contraction which he describes may suffice to adapt the shape of the pharynx and mouth as a suitable resonance tube for the laryngeal sound of the head-tone ; but results rather as an effect of over strain than as a physiological effort.

Some strictures might be made on the views promulgated in reference to respirations and respiratory exercises, but these points are rather beyond the scope of the ARCHIVES.

In conclusion, we welcome this treatise of Colombat as a sure and strong step in the proper direction to rescue stammerers, stutterers, and the like, from the clutches of charlatans and wonder-workers, and confide them to the care of scientific guides, who will lay the foundation for permanent relief from their troubles of articulation. [J. S. C.]

Die Laryngoscopie der Thiere nebst Mittheilungen über die Innervation des Stimm- und Schluckapparates. Dr. S. STEINER, Heidelberg. This small pamphlet of 22 pages

contains a lucid description of some interesting experiments performed on rabbits and other animals with a view of determining the innervation of the larynx and pharynx.

The author first gives a description of the manner in which the animal is to be secured, and in which the laryngoscopic examination is to be made. He then points out the peculiarities of the normal laryngeal image of the rabbit, and calls special attention to the fact that the "*glottis vocalis*" and the "*glottis respiratoria*" each make up one-half of the whole rima glottidis.

He then describes the effect of a section of both inferior laryngeal nerves, and also of both trunks of the pneumogastric, in the first instance, the vocal cords cease their respiratory movements, while in the latter case, they move up and down like valves, with every inspiration and expiration. On section of the superior laryngeal nerves he found no alteration in the action and position of the vocal cords. He also found that if both inferior and superior laryngeal nerves were cut, the voice in the rabbit was still possible, which phenomenon he explains by the fact that the M. constrictor pharyngis inferior diminishes the width of the glottis, while the M. thyro-hyoid causes the edges at the vocal cords to come in contact with each other.

He further found in the course of these experiments, the interesting fact that the superior laryngeal nerve carries centripeal fibres, whose irritation produces the motion of deglutition in herbivorous animals, while these fibres seem to be absent in the carnivorous animals.

The pamphlet is accompanied by a lithographic plate showing the laryngeal images of the rabbit, the cat and the dog.

[C. S.]

QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

LARYNX.

1. Adams. A new laryngoscope and rhinoscope. *N. Y. Med. Gazette*, May 22, 1880.

2. Armaingaud. On the value of pharyno-laryngeal anæsthesia as a sign of hysteria. *Gaz. de Hôp.*, No. 39, 1880.

3. Aschenboen. Papillomata glottidis. Case. *Arch. fur Kliu. Chir.*, 1880, xxv, 162.

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1. **A new laryngoscope.** Adams has devised, and claims priority for, a combined laryngoscope and illuminator, which he calls the electrical laryngoscope. The principle is the same as that of the mirror of M. Trouve, published some time since in the *Popular Science Monthly*, and which it is proposed to use for dental purposes. But his instrument is, Dr. Adams claims, totally different, and apparently much more practical. It consists (see drawing in original) of an ordinary throat mirror fastened to a telescopic shank, which is for the purpose of regulating the distance between the mirror and the curve or right-angled depression in the shank which holds the electric apparatus. In this depression are fastened two uprights, one on either side, held by a binding post, of which there are also two, for the reception of the wires coming from the battery. A ball and socket joint support the tube in which is enclosed the electric light, this is a glass carbonic acid vacuum tube, arranged in the form of a spiral, and having enclosed within it a fine platinum wire, the terminals of which are in connection with the two binding posts above referred to; behind this is a concave reflector. When the wires are connected with an ordinary cautery battery, the platinum wire enclosed in the glass spiral is rendered incandescent, and an intense light, differing but little, we are told, from sunlight, is given forth. The luminous rays emitted from this incandescent platinum

spiral are directed upon the throat mirror, and thence reflected in the direction of the cavity to be illuminated. The examiner's eye, it will be seen, is protected from the intense white light. The instrument is light and easily managed. What its practical worth may be, time will prove. It is certainly an interesting step toward solving the question of a perfect laryngoscopic illumination, and its originator is entitled to the thanks of specialists for his attempts at improving their *armamentarium*.

2. **The importance of anæsthesia of the laryngo-pharynx as a symptom of hysteria.** During the course of an epidemic of hysteria which occurred among the pupils at a young ladies' boarding-school at Bordeaux, M. Armaingaud observed that in some cases irritation of the pharynx, epiglottis, the opening of the larynx and the ary-epiglottic folds by means of the finger-tip or a stiff feather was followed neither by the slightest sensation nor by reflex action. He concludes, therefore, that this anæsthesia is not simulated, agreeing with the views M. Chairon, who called attention to the fact several years ago. He does not believe with the latter, however, that this symptom is pathognomonic of hysteria, because it is also found in a certain proportion of cases of epileptic, saturnine and simple neuropathic convulsions.

M. Beruntz has found the same insensibility in 2 cases in 5 of epilepsy, and 8 cases out of 16 of lead-poisoning. Nevertheless, together with other symptoms of hysteria, anæsthesia of the pharynx and larynx may assist us to decide whether the attack be simulated or real.

4. **Congenital syphilis of the larynx in infants.** At a recent meeting of the Pathological Society, of London, Dr. Barlow showed a larynx removed from a child eleven months old. The symptoms were weakness and hoarseness of the voice, especially when the child cried. There was also a hoarse cough, but no sign of laryngeal dyspnœa. The child died suddenly after three or four days illness, the cause of death appearing to be the supervention of membranous inflammation upon a chronic laryngitis. The *post-mortem* examination revealed some œdema of the aryteno-epiglottidean folds, very slight erosion of the mucous membrane above and below the vocal cords and in the ventricles and some very scanty, thin and closely adherent lamellæ of false membrane. The doctor was induced to bring the case forward because Dr. Sémon had recently stated that disease of the larynx in congenital syphilis was very rare. In his experience he found it of quite common occurrence that syphilitic children when first brought for treatment with snuffles, thrush, etc., had also a harsh, weak voice, but as this rapidly improved under mercurial treatment, but little attention was paid to it. His colleague, Dr. Warner, had shown him a case of true warty growths in a syphilitic child.

8. **Ablation of the larynx, pharynx, soft palate, both tonsils and base of tongue.** Cazelli's patient was a woman of twenty who suffered from epithelioma of the parts named. The operation was begun by performing tracheotomy by means of the galvano-cautery; the larynx was then denuded, carefully isolated and removed together with the cricoid by the galvano-caustic loop. The pharynx was then detatched as far as the tonsils and amputated, the hyoid bone divided, the base of the tongue removed, the cavity of the mouth penetrated, the soft palate detatched and lastly the entire pharynx and both tonsils removed. The treatment consisted in deep suture of the

hyoid muscles, employment of the œsophageal bougie, maintaining in the larynx Trendelenburg's canula and union of the two upper thirds of the wound. The operation was performed by Lister's method. It lasted three hours and was attended with almost no loss of blood. During the whole time the respiration, pulse and temperature were satisfactory. The patient has made a successful recovery, and Cazelli reports that he has not only been able to replace the œsophagus by means of an India-rubber tube but that he has also managed to invent an apparatus enabling the patient to articulate sounds.

9. **Anomalies of voice and of the vocal organs.** Coën in a lengthy article deals with the questions of the diagnosis and therapeutics of the various anomalies of the voice and vocal organs which produce such results as stammering, stuttering, lisping—a peculiar form of loss of speech—which he terms *alalia idiopathica*, snoring, nasal voice, and finally two cases of an unusual anomaly of speech, classed as *cacophonia*, and one of *mogilalia nasilæa*. The details of the histories, illustrative of each class of case are given, as well as the statistics bearing upon the question and the results of his treatment.

10. **Laryngeal Phthisis.** The most frequent lesion of laryngeal phthisis according to Dr. Cohen's experience, is a pyriform swelling of the tissues about the supra-arytenoid cartilages, due chiefly, as determined under the microscope, to accumulation of lymphatic cells in the connective tissue. The outline of the posterior portion of the fold of tissue extending from the epiglottis to the supra-arytenoid cartilage of each side—for this form of the manifestation is most frequently bilateral though not symmetric—is rounded instead of being sharply defined, and tapers off more or less toward the epiglottic portion of the structure.

The next most frequent manifestation, and one not infrequently associated with the pyriform induration first described, though often enough unassociated with any evidence of it, is a tumefaction of the connective tissue in the fold of structure uniting the two arytenoid cartilages.

The vocal bands come next in order, as regards pathological change. They become infiltrated, thickened into veritable vocal cords, then the epiglottis often, at least at first and for a long time, without association with any other local lesion, and when so associated, most frequently with a certain amount of the pyriform infiltration of the aryteno-epiglottic fold.

Finally, another distinct lesion of the phthisical destruction of the tissues of the larynx, is an erosion of the mucous membrane over the vocal processes of the arytenoid cartilages. It may be unilateral or bilateral. It may be evanescent or amenable to remedies, or it may be permanent or unamenable to remedies.

Any and all of the lesions described may be associated together; any and all of them may progress to ulceration which may extend in various directions, comprising the entire structure of the larynx, superficially or in depth. Any and all of them occasionally persist for years without progression or retrogression. Any and all of them occasionally subside under treatment and without it. All of them are associated with pulmonary phthisis, although its physical manifestations are at times so slight as to elude detection, or so indefinite as to give the patient the benefit of the doubt.

Cohen has failed by the most persistent questioning, to associate any one form of the lesion more than another with hereditary predisposition to consumption, with any other family predisposition, with hemoptysis or with special calling or vocation.

12. **Relations of membranous croup and diphtheria.** It is unfortunate that want of space will not permit us to give a complete analysis of this most valuable report, the result of investigations carried on by ninety of the most distinguished physicians in all parts of the world. Although the deductions drawn by the committee are by no means conclusive, still strong clinical evidence is shown to prove that membranous croup and diphtheria are separate and distinct affections. The report covers 175 pages, and discusses the following points :

1. The known causes of membranous laryngitis and their relative frequency.

2. The conditions of occurrence as regards association with other diseases, and as to climate, seasons, and general hygienic conditions.

3. The possible distinctions between classes of cases as regards (a) General course. (b.) Symptoms. (c.) Anatomical distribution of the false membrane. (d.) Morbid anatomy—local. (e.) Morbid anatomy—general. (f.) Histological characters. (g.) Sequelæ.

13. **Perichondritis of the larynx.** Mr. Eve at a meeting of the Pathological Society at London, showed three specimens of perichondritis of the larynx. The first from a man who was attacked with dyspnœa while convalescing from variola. Tracheotomy was performed but death resulted. There was œdema of the epiglottis and ary-epiglottidean folds. Two oval ulcers were observed beneath the posterior attachments of the two vocal cords, leading into cavities containing pus in which lay the necrosed arytenoid cartilages, the upper and back part of the cricoid cartilages was also necrosed.

The other two specimens were from cases of typhoid fever. The condition of larynx was like that in the first case, except that the cricoid cartilage was not affected.

14. **Strumous hypertrophy of the larynx.** The patient aged seventeen and of marked strumous habit, complained of dyspnœa, stridulous breathing, cough, and aphonia. The epiglottis, arytenoids and mucous membrane lining the larynx were greatly enlarged, pale, and firm to the touch. Tracheotomy was refused and death from asphyxia resulted. The autopsy showed the glottis to be almost completely obliterated, the thickening extending throughout the inferior portion of the larynx and down the trachea for a distance of four centimetres. The hypertrophied tissue had a whitish, bacon-like appearance, resembling the tissue of elephantiasis and due to the development of connective tissue.

15. **Aphonia spastica.** Fritsche communicates the full and interesting details of six cases of this rare laryngeal lesion—first described by Schnitzler in 1875, and gives a full description of its nature, laryngoscopic appearances and treatment. It consists in functional cramps of the muscular apparatus of the larynx, analogous to writers cramp, and is caused by a disturbance in the coördination power, arising with each effort to put the muscles into action. The general symptoms do not vary from those of any form of aphonia due to paralysis, there is usually total loss of voice. The patient must make violent

efforts to produce a loud tone, otherwise the sound remains fixed in the larynx, the cramps preventing its exit. The laryngoscope will show during each effort at phonation, that the vocal cords are convulsively pressed against each other, throughout their whole length, even overriding, and that no glottic opening consistent with the normal production of sound is left between them, nor exit for the expiratory stream of air. A small opening alone is seen during forced phonation, at the posterior aperture of the glottis, behind the processus vocali, through which air rushes, giving rise to the peculiar hissing tone of certain notes, which the patient produces. In cases of a lighter grade, there is the same cramp like spasm of the vocal cords, but only at their anterior extremities, and the spasm is but momentary, the treatment consists in the use of electricity, the constant stream, as well as internal and external faradization, the two latter being less serviceable than the former. Schnitzler has had good success with central galvanization.

18. **Laryngeal phthisis.** Mackenzie holds, (1), That laryngeal phthisis is due to the presence and subsequent breaking down of tubercles in the mucous and sub-mucous membranes. (2). It is always secondary to pulmonary phthisis. (3). It is not due to the corrosive action of the sputa. (4). It is much more common among males than females. (5). The symptom most frequently present is impairment of the vocal function. (6). The naked eye appearances of laryngeal phthisis cannot be absolutely relied upon either during life or after death. (7). The prognosis is always unfavorable. (8). The only treatment of any value consists in the employment of palliative measures.

19. **Cancer of larynx and pharynx.** In Dr. Smith's case the growth was epithelioma. From the history it was probable that there was some chronic disease, which suddenly became malignant, and then the malignant growth very rapidly broke down. The case illustrates the dislike of the disease to enter the larynx. The pharynx is believed to be a better soil for the cancerous growth, and it was interesting therefore to notice that it had spread into the air-passages just where glandular tissue was most abundant. In the discussion Mr. Walsham stated that in all the specimens in the Hunterian and St. Bartholomew's Museums the growth was limited to the pharyngeal side of the ary-epiglottic fold ; in one case, at St. Bartholomew's, the new growth had dipped over into the larynx, without, however, involving it. This was probably due to the change in the kind of epithelium. A similar fact was noticed in the rectum, where cancer does not spread down quite to the anus, nor does epithelioma spread up beyond the limit of the part formed by the infolding of the epiblast. Dr. Sémon stated that it is a well observed fact that diphtheritic inflammation of the larynx is attended with less constitutional disturbance than the same affection in the pharynx, the explanation being that the lymphatics of the larynx, after forming a network of their own, enter four small glands, two in the trachea and two between the cornua of hyoid bone and thyroid cartilage. The lymphatics of the pharynx, on the contrary, anastomose very freely, and enter numerous glands. For the same reason, we find that laryngeal carcinoma will remain a long time stationary and limited, and Ziemssen has shown that the glands are long unaffected. Carcinoma of the pharynx, on the other hand, soon implicates the glands. This should guide us in advising the operation ; when the disease is entirely laryngeal it is legitimate, but when pharyngeal an

early recurrence may be looked for. The terms primary and secondary carcinoma, as applied to the larynx, are inaccurate, for true secondary cancer has never been known to occur ; they should be replaced by the terms endo-laryngeal carcinoma and carcinoma of the larynx *per contiguitatem.*

21. **A contribution to the study of laryngeal cancer.** Koch cites a case of the above affection apparently for the purpose of establishing the recently expressed views of Krishaber upon the same subject.

28. **Laryngeal polypi in children.** During the ten years that Dr. Löri has had charge of all the children suffering from laryngeal diseases, in the Budapest Children's Hospital, he has seen but three cases of laryngeal polypi, all papillomata. In two of the the cases the tracheal mucous membrane was also the seat of the growths. The histories of the cases are given in minute and wearying detail in the original article.

30. **Gummy tumors of the vocal cord.** Massei who ascribes all syphilitic ulcers and growths from the mucous membranes of the larynx, to gummatous processes, describes under the above name, a bilateral or unilateral, dark-red infiltration on the inner and lower edge of the vocal cords, which shows little tendency to ulceration, but may lead to laryngeal stenosis, a condition which is further brought about by a slight loss of abductive mobility in the arytenoid cartilages, due to a peri-articular infiltration. Generally these infiltrations are re-absorbed. Occasionally they result in ulceration with resultant cicatricial contraction, the voice is altered, the patient has a deep cough, but little or no pain. Massei gives special signs by which these gummatous infiltrations may be distinguished from like swellings of the vocal cords, due to catarrh, to chorditis vocalis inferior-hypertrophica, and tuberculosis. He tells us nothing in relation to the frequency of these gummata. Aside from a general anti-syphilitic treatment, he recommends inhalations of sublimat, or insufflations of calomel, and advises against mechanical dilatation. In marked stenosis, tracheotomy is indicated.

32. **Laryngeal syphilis.** Morgan the late assistant of Prof. Schnitzler of Vienna, discusses the general topic of laryngeal syphilis, its causation, symptoms, diagnosis, complications, etc., and recommends the plan of treatment pursued by Schnitzler, namely, mercurializing the patient as quickly as possible in the earlier stages, and in the later stages, administering large doses of the iodide of potassium in conjunction with local applications. In superficial syphilitic laryngitis accompanied by erosion, mucous patches and slight ulceration, inhalations of bichloride of mercury are very useful. The following is the formula used by Schnitzler.

R Hydrarg. Bichlor. grs. ijss., Spt. Vini Rect. ℥ ii, Aqua ℥ viij, M., from four to six drachms to be inhaled from a steam atomizer daily.

For more extensive ulcerations soda-glycerine is applied.

Absolute rest of voice and abstinance from tobacco should be insisted upon. Acute œdema is generally relieved by two blisters placed one on each side of the larynx, space being left between them in which to perform tracheotomy if required. If these means fail a strong solution of chromic acid, one part to two or four of water often immediately succeeds in reducing the swelling. In chronic œdema, insufflation of iodoform in powder, gum arabic, and sugar of lead, gives good results ; or the application of iodoform and glycerine, thirty

grains of the former to an ounce of the latter, With regard to tracheotomy seventy-six per cent. is the rate of success. The canula should be removed as early as possible after tracheotomy, as the longer it remains the more difficulty there will be in dispensing with it. In order to prevent relapse, the patient should be left without treatment for an entire month, then a teaspoonful of liquor hydrargyri is given during the first eight days of every month,and fifteen grains of iodide of potassium during the last eight days. This treatment is to be continued one year.

33. **Laryngeal syphilis and phthisis.** The voice in laryngeal syphilis may be normal or hoarse in the secondary period; it is rarely lost but always hoarse in the tertiary period. In the initial period of tuberculosis the voice is always hoarse, even aphonia being sometimes observed; it always exists in the ulcerative stage.

The cough, none in secondary syphilis, very rare in tertiary, frequently exists in the ulcerative period of tubercular laryngitis. Expectoration, none in secondary syphilis, tinged with blood and purulent in the later lesions, is mucous in the beginning of the tubercular laryngitis; muco-purulent in its ulcerative period.

Pain is always worse at night in syphilis. In syphilis the sub-maxillary and cervical glands are enlarged, while in phthisis they undergo more or less atrophy.

In the beginning both affections present hyperæmia of the mucous membrane, which varies both as to color and situation according to the diathesis present.

In phthisis it generally occupies the arytenoid region, and is of a rosy color. Syphilitic erythema, on the contrary, is located by preference upon the anterior part or upon the free border of the vocal cords; its color is dark red. Mucous plaques can scarcely be mistaken for tuberculous erosions.

The plaque is raised above the mucous membrane, depressed in its centre, and has at the same time an inflammatory border of carmine red. The erosion while presenting the grayish appearance of the mucous patch differs in this that it does not present edges raised above the surrounding mucous membrane, and that its borders are confused and poorly defined. Further, we may distinguish a swelling of the arytenoid mucous membrane, and frequently coexisting alterations of the cord.

Gummata may also be confounded with tubercles, and syphilitic with tubercular ulcerations, the principle differential signs being as follows:

The gumma is large and yellowish, with edges presenting above the mucous membrane.

The tubercle is gray, opaline, of small size, and gives a sand-like appearance to the mucous membrane.

The gumma occupies by preference the epiglottis and glottic portions of the larynx and trachea. Tubercle is generally located upon the arytenoid mucous membrane in the sub-glottic portion. The ulcerations in syphilis are one or many; their borders are indurated and sharp cut.

In tuberculosis they are oval or almost round, with jagged borders, soft, often covered with fungous granulations or polypoid vegetations. Treatment always arrests the progress of the disease in syphilis. In tuberculosis, especially in the ulcerative stage, it is powerless.

36. **Bilateral paralysis of the laryngeal muscles.** In this case, probably due to syphilis, a negative result followed treatment by the iodide of potassium and the local administration of electricity.

43. **Cysts of the vocal cords.** Sommerbrodt holds that though little has been written about cysts of the vocal cords, their occurrence is not so rare and that the affection is a typical one, the laryngoscopic diagnosis is easy and the following appearances constant. A nodulated or spindle-shaped thickening of the vocal cords—of tendinous color—like unto the normal cords, and the laryngeal sound is readily pressed into the tumor, leaving a small pit or depression. Sommerbrodt gives the details of four cases of which three were treated. The operation consisted in puncturing the cyst with a lancet-shaped knife. A drop of fluid exudes, the sac collapses and the previously hoarse voice becomes clear. In one case the sac refilled, requiring a second and successful operation. In spite of the fact that no glands are found upon the normal vocal cords, Sommerbrodt believes these little growths to be retention tumors. Waldeyer has shown that muciparous glands are found below the true cords and in the mucous membrane, which often have one or two openings at or near the lower edge of the vocal cord.

45. **Congenital syphilis of larynx.** Dr. Allen Sturge showed at the Pathological Society the larynx of a boy two years and a half old. The patient had suffered from intense inspiratory and expiratory dyspnœa, stridor and cyanosis. The voice was reduced to a harsh whisper. He had evident signs of congenital syphilis, inherited from his father; he improved under mercurial inunctions, and died suddenly. The mucous membrane of the left half of the glottis was much swollen, quite down to the rima-glottidis. There had been extensive alteration which had destroyed both true and false vocal cords, particularly on the left side, and by cicatrization had left symmetrical deep fissures and commencing stenosis at the upper part of the trachea.

Dr. Lees confirmed Dr. Barlow's statement as to the frequency of affections of the larynx in the course of congenital syphilis.

Dr. Bumstead was reported by Dr. Barlow as having published six cases of very deep ulceration occurring in the practice of Dr. Lefferts. On invitation of the president, Dr. John Mackenzie, of New York, who had especially studied this subject, stated that he had collected 80 cases of marked congenital syphilitic disease of the larynx, which he hoped shortly to publish. He thought that affection of the larynx was as common in congenital as in acquired syphilis. Twenty years ago examples of the latter were looked upon as pathological curiosities as those of the former are now. Many cases were overlooked from a neglect to use the laryngoscope.

PHARYNX, SOFT PALATE AND TONSILS.

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19. SMITH. Epithelioma of pharynx, invading larynx. Case. *Lancet*, Feb. 28, 1880.

20. WEINLECHNER. On stenosis ; formation of diverticles and foreign bodies in the pharynx and œsophagus ; their treatment. *Wiener Med. Wochensch.*, No. 8, *et seq.*, 1880.

2. **A fatal case of enlarged tonsils.** The patient, a robust young man of 21, had been more or less troubled with dysphagia for about three weeks. When first seen by Dr. Blair, both tonsils were considerably enlarged, and showed patches of ulceration upon their surfaces ; the uvula was enlarged, the glands of the neck swollen, and dysphagia more marked than before. The case passed into the hands of another practitioner before treatment had been carried to any extent, and five days later the man died, apparently of asphyxia, as the throat appeared to have become completely closed.

5. **A case of gangrene of the soft palate.** The patient, aged 22, was seized without obvious cause with gangrene of the soft palate, which resisted all attempts at treatment, and at the end of 18 weeks caused her death. Syphilis was excluded. Ten weeks after the beginning of the affection the soft palate was almost entirely converted into a putrid mass. The pillars of the fauces on the left side were covered with a grayish, sanious layer; the vault of the palate presented in various places eschars, which apparently involved only the mucous membrane, for the probe showed no part of the bone to be denuded. The pharynx seemed also to be attacked. The gangrenous ulceration extended to the mucous lining of the posterior third of the cheek, and especially at the base of the alveoli. Death from syncope occurred. The autopsy revealed necrosis of the right superior and inferior maxillary bones.

7. **Chronic follicular pharyngitis.** In the whole of Franks' lengthy article which is mainly a *resumé* of the well-known work of several authors, there is no new point except that herewith given. He has used pure carbolic acid with success in the second or hypertrophic stage of the affection, applying it carefully with a bit of cotton wool, and making pressure over the follicles. The acid acts both as a caustic and an irritant, and while it gradually destroys the follicles, it stimulates the blood-vessels to contract, and so diminishes the general hyperæmia. Of course the caustic action induces inflammation, but this is never intense, and soon subsides. Again, carbolic acid has a most decided anæsthetic effect. An application twice a week is enough.

8. **Hypertrophy of the tonsils.** Dr. Hamilton, in the course of a recent paper upon the above subject, made the following remarks:

From personal experience he regarded chronic hypertrophy of the tonsils as one of the manifestations of the strumous diathesis. He had scarcely seen it occur except in children who presented the general appearance seen in the condition called struma. He had noticed often that it was hereditary, and had known it to pass through several successive generations. He was not prepared to say that it generally had associated with it enlargement of the lymphatic glands of the neck. His impression was otherwise. Still, as he believed, that fact did not militate against the view that the condition belonged to the strumous diathesis. Again, the tonsils had a period of growth and decline. His impression was that the tonsils were seldom seen in early infants; they usually began to be seen at two, three, four, or five years of age, and reached the climax of growth from the tenth to the twelfth year, the period during which application was made to the surgeon most frequently for relief, and it was rare to see hypertrophy of the tonsils after the twentieth year of age, at all events anything that demanded extirpation. The question of the removal of the tonsils was not in dispute, but perhaps the circumstances under which their removal was proper was yet at issue. He had been in the habit of saying that, inasmuch as they had progress and decline, unless they occasioned serious inconvenience, there was no good reason why they should be removed. If, however, they were the seat of frequent attacks of acute inflammation, or if they interfered seriously with deglutition or respiration when the child was lying down, or if they were subject to acute attacks of neuralgia, or if they interfered with hearing, or in any way interfered with the Eustachian tube, there was sufficient reason for their removal. With reference to hearing, it was well to consider whether

the impairment was due to pressure produced by the enlarged tonsils or to continuous inflammation producing actual thickening of the mucous membrane of the tube and so preventing audition. He had noticed that removal of the tonsils did not at once improve hearing; but that a period of one or two years must elapse before the benefit was experienced. Removal of the tonsils when actually inflamed was not to be practised unless the patient was suffocating. Nor would he operate upon a person who was known to have a strong hemorrhagic diathesis, because of the liability to profuse hemorrhage. Dr. Hamilton then referred to three cases in which the hemorrhage was so considerable that it became alarming, all occurring to patients fourteen or fifteen years of age.

11. **Extirpation of the pharynx.** Langenbeck believes that pharyngeal carcinoma is very unusual, comparatively few cases being on record. Of 548 cases of carcinoma observed during eight years at Billroth's clinique, not one case of carcinoma of the pharynx is recorded.

At Langenbeck's clinique only one case was observed out of 230.

Langenbeck has seen five cases altogether, the youngest a woman aged thirty-two, the eldest a man of fifty-eight years.

Comparing the immediate dangers of extirpation of the larynx with those of extirpation of the pharynx, the writer is inclined to believe the latter as relatively free from danger. He believes also that the great danger of extirpation of the pharynx belongs not to the operation itself, but rather to the leaving behind of the larynx; the extirpation of the pharynx alone, without simultaneous removal of the larynx, has not yet been accomplished. The operation, however, he believes can be performed; that it is not only practicable, but also that it does not present any great difficulty.

The extirpation of tumors from the upper part of the lateral wall of the pharynx is best accomplished after having previously sawn through the lower jaw. Large tumors growing from the base of the skull can be extirpated through the mouth. (Busch. Proceedings of the German Ass'n of Surg., 1877, page 115.) A retro-pharyngeal myxo-chondroma situated opposite the second and third cervical vertebræ was removed by Von Heine (Ibid, page 115,) by means of an incision extending from the mastoid process to the greater cornua of the hyoid bone.

Growths which are situated in the region of the ary-epiglottic ligament can be best reached by the sub-hyoid pharyngotomy. Carcinoma at the level of the upper part of the larynx can only be extirpated by removing the corresponding part of the pharyngeal wall, and this can only be done by entering the pharynx through the lateral part of the neck, and then pushing aside the larynx. A preliminary tracheotomy is advised. The superficial incision commences midway between the angle and symphysis of the jaw and runs over the great cornu of the hyoid in the direction of the sterno-thyroid muscle as low down as the cricoid or further. The superficial fascia, platysma and omo-hyoid muscles having been cut through, the deeper structures are next attacked.

The lingual and superior thyroid arteries are taken up between two pair of forceps, cut and tied. In the same way, too, the branches going to the facial vein and the superior laryngeal nerve has to be cut. Then the tendons of the digastric (posterior belly) and the stylo-hyoid muscles are separated from the

hyoid bone, and the pharynx is opened through the whole extent of the wound. The pharynx is now freely examined with the fingers and the extent of the disease ascertained. Then in order to free the pharynx, the larynx must be displaced toward the opposite side and more or less rotated on its axis in order to make the corresponding anterior wall of the pharynx more accessible. This is all accomplished through the wound ; while to free the posterior wall, a transverse incision is made below the level of the palate and the pharynx is then dissected or torn away from the vertebral column by an elevator.

The greatest danger from the operation appears to be pneumonia, caused by the escape of foreign matters into the lungs during fits of vomiting. What influence section of the two branches of the superior laryngeal nerve may exercise in the production of pneumonia, it is not possible to say.

The following is a summary of the three cases upon which Langenbeck operated as above described :

Case I. Male, æt. 48 ; carcinoma of the pharynx of 9 months duration. Preliminary tracheotomy ; operation lasted three-quarters of an hour ; died on the third day of gangrene of the lung.

Case II. Male, æt. 78 ; epithelial cancer of the posterior pharyngeal wall. Extirpation ; and of a part also of the larynx. Death within twenty-four hours from the effects of hemorrhage ; chiefly capillary. No secondary growth was discovered at the autopsy.

Case III. Female, æt. 54 ; epithelial cancer of the pharynx and larynx. Family history of cancer.

Preliminary tracheotomy ; patient died on thirteenth day. The autopsy showed pleurisy with patches of pneumonia in both lungs.

The sheath of the jugular vein showed the remains of some of the growth which could not be removed.

14. **Round-cell sarcoma of the pharynx.** The patient, a woman of 53, in fair health, has suffered from a growth in her throat for about two years, which caused defective speech, dyspnœa and dysphagia. The tumor seemed to grow from the soft palate and had contracted extensive adhesions to the pharynx on the left side and extended to a considerable distance down It was comparatively soft and quite painless. The operation was as follows :

A preliminary tracheotomy was performed ; next the lower jaw was divided, two sides of the jaw were drawn asunder, and the tongue pulled well forward and downward.

A sponge was then placed in the larynx to prevent the passage of blood, an incision was made in the mucous membrane over the tumor, and by means of the fingers it was easily removed. The wound of the mucous membrane was stitched with carbolized catgut, and the two sides of the jaw bound firmly together by silver wire sutures. She died apparently of congestion of the lungs on the second day after the operation.

16. **Preventing suppuration in acute tonsillitis.** O'Toole inveighs against the statement so often made that strong solutions of silver nitrate applied over inflamed tonsils will abate the process, and believes, with many others, that it is only a useless irritant. Still he suggests no method of carrying out the desirable result foreshadowed in the title of his paper.

18. **Syphilitic pharyngeal stenosis.** The authors describe three dis-

tinct forms of stenosis of the pharynx. 1st. The most common is situated between the naso-pharynx and mid-pharynx, and is caused by ulceration and contraction of the posterior pillars of the fauces, and the drawing backward and subsequent adhesion of the soft palate to the pharyngeal wall. 2d. More rarely it occurs between the mouth and the pharynx, and is produced by the ulceration and contraction of the anterior fauces and the drawing down and subsequent adhesion of the soft palate to the dorsum of the tongue. 3d. The involvement of the lower part of the pharynx, the stenosis being produced by bands which stretch across the pharynx and glue the parts together. From analysis of the recorded cases of stenosis of the pharynx, the following conclusions are drawn :

1. Tracheotomy is called for, both as a temporary expedient to obviate sudden death from asphyxia, and as an essential factor for safe and satisfactory treatment.

2. Division with a guarded knife presents advantages over other methods of treatment.

3. Several small notches are preferable to a deep incision, and when possible the parts should be divided from above downward, so as to allow a full view of the surface of the tissues to be divided.

4. The aperture should be enlarged in such a direction as to permit the passage of liquid food, clear of the entrance to the larynx.

19. Hays reports an interesting case of bilateral paralysis of the crico-arytenoidei postici, with laryngitis, possibly syphilitic. Treatment, potass. iodid. grs. x. t. i. d., vapor benzoin (L. T. H. Pharmacopœia), local applications of sol. of zinci chloridi gr. 30 ℥ i, and the Faradic current to recurrent laryngeals. Above treatment continued for about ten weeks, with marked improvement.

NARES AND UPPER PHARYNX.

1. Aschenoven. Sarcomatous tumor of the naso-pharyngeal space. Case. *Arch. für Klin. Chir.*, 1880, xxv, 150.

2. Baginsky. Examinations and operations with the aid of rhinoscopy. *Volkmann Klin. Vorträge*, No. 160, 1879.

3. Baiardi. Sarcoma of the nose. Case. Cure. *Osservatore-Terino*, 1880, xvi, 100.

4. Calignon. On the extirpation of naso-pharyngeal polypi. *Thèse de Lyon*, 1880. *Lyon Med.*, April 18, 1880.

5. Calmettes. A review of recent literature on the subject of Ozæna. *Revue des Sci. Med. Hayem*, No. 30, 1880.

6. Campbell. Glandular carcinoma of the nasal mucous membrane ; excision ; sup. maxilla. Recovery. Case. *Brit. Med. Jour.*, Feb. 28, 1880.

7. Capart. On a modification of Zaufal's instrument for removing naso-pharyngeal polypi. *Bull. Acad. Rov. de Méd. de Belg.*, Brux., 1879, 3, s. xiii, 1151.

8. Cutter. Chancre of the nostril. Case. *Phila. Med. Times*, March 13, 1880.

9. DAVIDSON. On plugging the posterior nares. *Brit. Med. Jour.*, May 1, 1880.

10. DUBIEF. On chronic inflammation of the closed follicles (Luschka. glands) in the posterior nares, and their treatment by means of the naso-pharyngeal douche. *Thèse de Paris*, No. 323, 1878.

11. DUNCAN. Abscess of the antrum, with chronic discharge ; treatment and cure by use of a new drainage tube. *N. Y. Med. Record*, April 17, 1880.

12. DUROZIER. On rheumatic and cardiac epistaxis. *Tribune Méd.*, Paris, 1880, xiii, 31–33.

13. HAMILTON. The surgical treatment of epistaxis. *Brit. Med. Jour.*, May 8, 1880.

14. HEATH. Three cases of tumor of the antrum of Highmore. *Lancet*, March 20, 1880.

15. HERING. New method of treating diseases of the nose. *Medycyna*, Warszawa, 1880, viii, 65–72.

16. KUN. On the importance of rhinoscopy in diseases of the nose *Gyógyászat*, Budapest, 1880, 113.

17. LANGE. Adenoid vegetations in the naso-pharyngeal space. A new method of operating. *Monatssch. für Ohrenheilkunde*, No. 2, 1880.

18. MACKENZIE. Laryngeal phthisis. *Brit. Med. Jour.*, ii, 38, 1879.

19. MASTERMAN. Treatment of ozæna. *Brit. Med. Jour.*, April 17, 1880.

20. MONTANO. Operation on a naso-pharyngeal polypus by means of the galvano-cautery. *Gaz. Méd. Chir. de Toulouse*, 1879, xi, 273–281 ; 1880, xii, 1.

21. ROCHARD. A contribution to the subject of naso-pharyngeal polypi. *Bull. et mém. de Soc. de Chir. de Paris*, 1879, n. s., v, 903.

22. STERLING. Naso-pharyngeal catarrh. *Proc. Med. Soc. County Kings*, Brooklyn, 1880, i, 5, 14–23.

23. TAUBER. Adenoid vegetations in the vault of the pharynx. *Cincinnati Lancet and Clinic*, April 24, 1880.

24. THORNTON. Treatment of ozæna. *Brit. Med. Jour.*, March 27, 1880.

25. THUDICUM. On polypus and other morbid growths in the nose ; their radical treatment by the electro-caustic method, and their connection with asthma. *Lancet*, April 17, 1880.

26. THUDICUM. Treatment and complications of nasal polypi (see also above). *The Lancet*, Feb. 21, 1880.

27. VERNUEIL, Duplay, Rochard and Auger. On naso-pharyngeal polypi. *Bull. gen. de Therap.*, Dec., 1879. *Lond. Med. Record*, April, 1880.

28. VOLTOLINI. On nasal polypi, and the operation for their removal. *All. Wiener Med. Zeitung*, No. 12, 1880.

29. WOLFROM. On the treatment of catarrh of the antrum. *Berlin Klin. Wochensch.*, No. 16, April, 1879.

30. ZANDER. Operations on nasal polypi. *Deut. Med. Wochensch.*, No. 7, 1880.

31. ZIEM. On blenorrhœa of the nose and its adjacent cavities. *Monatssch. für Ohrenheilkunde*, No. 4, 1880.

32. ZUCKERKANDL. On the physiological and pathological anatomy of the nasal cavities, their pneumatic relations. *Stricker. Med. Jahrbücher*, heft i and ii, 1880.

13. **A simple method for controlling epistaxis.** Acting upon a suggestion made by the late Dr. Josiah Smyley, which was reported by Professor McNamara in an article upon "Epistaxis," in the *Dublin Quarterly Journal* for February, 1862. Mr. Hamilton advises the following simple method for arresting hemorrhage from the nose: Saturate a piece of linen material about 3 feet long and one inch wide in some astringent—tea, alum water, or preferably, gallic acid and glycerine. This strip should be regarded as consisting of three parts, each intended for its own special position in the nostril.

The end of the first portion should be grasped by the dressing forceps, and passed along the floor of the nostril and packed into the posterior nares until its presence can be distinctly felt by the finger-tip passed around the soft palate, The second portion should be gradually pressed into the roof of the nasal cavity, while the anterior nares should be filled with the remaining third. Thus every part is thoroughly tamponed. The plug should be left *in situ* until carried away by the natural secretion of the mucous membrane, any part protruding from the nostril being readily cut off by scissors.

14. **Tumor of the antrum of Highmore.** Heath has operated upon three cases of tumor of the antrum. The first, a collection of inspissated pus in the antrum simulating a morbid growth; second, a soft fibroma of the antrum; third, epithelioma of the antrum. The first two recovered; the third died of pneumonia on the 22d day.

21. **Pharyngeal polypi.** In a case of extensive naso-pharyngeal polypus with severe and exhausting hemorrhages, Rochard performed transfusion of blood, and then, partly by means of the ecraseur and partly by injections of a solution of chloride of zinc, succeeded in effecting a cure.

22. **Chronic naso-pharyngeal catarrh.** Dr. Sterling believes that chronic naso-pharyngeal catarrh is an important factor in the production of fibrous and catarrhal phthisis, and recommends for its relief the cleansing of the parts by some alkaline solution and the application of the usual astringents. In the atrophic form, the glands require stimulation, and for this he advises the use of iodine or steam, or the internal use of remedies which excite mucous secretion.

23. **Adenoid vegetations in the vault of the pharynx.** Tauber's elaborate paper contains an excellent recital of the history of this affection. In nearly one thousand cases of nasal and pharyngeal diseases he found six truly typical cases of adenoid vegetation. He recommends both general and local treatment, and urges for the latter the use of the galvano-cautery, to facilitate the application of which he suggests that a vertical incision be made on one side of the soft palate, near the arch, and another transverse, and about an inch long, at right angles to it. Turning out this triangular flap the entire posterior wall of the pharynx and its vault will be clearly exposed. The flap can readily be returned to its normal position after the cauterization.

24. **The treatment of ozæna.** Thornton publishes six cases of ozæna successfully treated by a nasal spray prepared as follows :

Sodæ carbonatis, sodæ biboratis, *aa.* ʒ ij : liq. sodæ chlorinatæ, ʒ ss—ʒ ii ; glycerine, ℥ i ; aquam ad, ℥ viij. Apply cold with hand ball spray.

25. **Nasal Polypus.** Dr. Thudicum recently read a paper on polypus in the nose, its radical treatment by the electro-caustic method, and its connexion with asthma. His experience extended over more than three hundred cases. He never employs the forceps, as they are painful, injurious, and ineffectual ; and he described cases where severe permanent injuries had followed their use—*e. g.*, partial or entire closure of a nostril, membranous adhesions between turbinate bone and septum, dislocation of turbinate bone, fracture of septum, etc. His own method obviated such risks. The polypus is drawn forward by hooks or fine forceps and then included in the platinum loop of the electro-cautery. " Posterior rhinoscopy," or as it was preferably termed, " Choanoscopy," was useful for diagnosis but not for operating ; and he thought Voltolini's and Zaufal's methods imperfect. He showed how atresia of the nostril was opened by burning inward and then excising the projecting parts ; enlarged spongy or cavernous turbinate tissue, by ablation in pieces. Ablation of the turbinate bone was effected by first cutting away the cavernous tissue with the electro-cautery, and then cutting away the bone with nippers, or chisel and hammer. Bony excrescences in polypi were similarly treated. Adenoid tumor of the choano-pharyngeal cavity he had removed through the nose by torsion and the electro-cautery. Epithelioma of the nasal cavity was soft, gave rise to great hemorrhage, and must be treated cautiously. Concealed abscesses of the nasal cavity, often of traumatic origin, were difficult to deal with. He had once met with abscess complicated by aneurism. He referred also to the treatment of fibro-cartilaginous growths on septum, and to fibrous, osteo-fibrous, and osteo-cartilaginous tumors arising in the roof of the pharynx. Chronic disease in the nose caused by foreign bodies was sometimes difficult to diagnose. Hearing was frequently affected from a polypus pressing on the Eustachian tube, and he had met with many persons who had been thrown out of career, employment, or situation by disease of the nose. The most common complication was asthma ; about every fifth case of polypus had or had been suffering at one time from asthma, which frequently disappeared on the removal of the polypus.

27. **On the treatment of naso-pharyngeal polypi.** At a recent meeting of the Société de Chirurgie. Verneuil and Duplay exhibited two patients whom they had treated for naso-pharyngeal polypi.

Verneuil had divided the soft palate, and with an ecraseur had cut away a portion of the tumor ; he had then applied cauterizations of chromic acid every two or three days. The polypus gradually softened and atrophied. Duplay had treated his patient by injections of chloride of zinc. Rochard mentioned a case in which the soft palate had been divided, the projecting portions of the tumor cut away and the remainder removed by injections of chloride of zinc. Anger deprecated the removal of polypi by radical operations, and recommended injections of perichloride of iron. (See Ref. No. 21.)

28. **Nasal polypi and their treatment.** From Voltolini's interesting essay we select alone, his remarks upon the ætiology of nasal polypi—a question upon which many views are held, but little known, and which, we are bound to

say, receives in the present instance but little further elucidation. He acknowledges that it is uncertain, and replies to patients, who question him, that they arise from an inherent perversity or badness in the individual. The immediate cause lies probably in an irritation, permanent or long-continued, caused by a chronic catarrh or previously existing malignant growth; while the remote cause, according to his belief, is a congenital predisposition.

30. **A new operation for nasal polypi.** Zander's procedure may be thus shortly summarized, (the details are given in his account of its employment in two cases,) after having brought the polypus into view, through nose or mouth, pass a thread through it, as high up as possible, by means of a needle, (Burow) and thus obtain complete control of the growth. A thread loop is now placed about it, by means of a canula (Bellocq), inserted through the respective naris, and with some manipulation, the growth is cut away.

TRACHEA.

1. Balzar. Remarks on the penetration of particles of dust into the air passages after tracheotomy. *Boston Med. and Surg. Jour.*, May 13, 1880.

2. Corley. Parker, Thompson, Buchanan. Tracheotomy in croup. *Brit. Med. Jour.*, April 10, 1880.

3. Morra. Primitive cancer of the trachea. *Giorno Intern. dell Scien. Med.*, No. 10, 11, 1879.

4. Schede. A case of croup in an adult. Extensive formation of false membrane in the trachea—Tracheotomy—Death. Case. *Med. Times and Gaz.*, March 6, 1880.

1. **The presence of dust in the lungs after tracheotomy.** In examining a number of lungs from children dead of croup where tracheotomy had been performed, Balzar found them to contain unusual quantities of dust and other foreign bodies. In some cases the surface of sections appeared black, as in a lung affected with anthracosis. These foreign bodies penetrate different parts of a pulmonary lobule and often form real plugs which nearly fill the alveoli. With a low power of the microscope they are seen to be distributed through the bronchi to a greater or less extent, and are also found in the alveoli and the blood-vessels. The larger bodies remain isolated, while the smaller ones become imbedded in the protoplasm of the cells. The quantity of foreign particles varies. They may be seen by the naked eye as blackish plugs springing from the surface of a section after macerating the lung in alcohol. Their presence is undoubtedly due to inspired air being drawn directly into the lung without having undergone the usual purification from its passage through the upper air passages. It is possible that many of the sequelæ of tracheotomy, broncho-pneumonia, etc., may be due to these penetrating irritants. To prevent these occurrences, the mouth of the tracheotomy tube should be covered

with some fibrous substance which will not itself furnish dust. Cleaning the patient's room should be done with care, the throat being protected meanwhile, and finally the inner wall of the canula may be oiled, so that any inspired particles may adhere to it.

2. **Tracheotomy in membranous laryngitis.** In his excellent article upon this subject, Mr. Parker advises early operation under an anæsthetic, the operation to be done as high as practicable. The tracheal wound should be well dilated and all shreds of membrane and foreign matter cleared out as thoroughly as possible before the introduction of the canula. A large feather passed up and down the trachea will accomplish this end. The author believes that after many a well performed operation which has not been followed by relief, the secret of failure is to be found in the fact that the trachea has not been cleaned out. He also advises the use of the largest sized canula which can be inserted into the trachea without violence. The shape of the tube should not be that of a semicircular curve, but bent at a sharper angle at the centre and nearly straight toward the extremities. Steam should be mingled with the inspired air, but the amount should vary with the individual case. An excess of steam is in all cases to be avoided, as it tends to depress the patient. The less there is of tracheal secretion the more steam is needed ; and the converse.

Steam may be made the vehicle for important disinfectant, stimulant, sedative or expectorant medication, A spray of carbonate of soda, 10–12 grains to the ounce of water inhaled through the canula is an excellent solvent. The canula and trachea itself must be kept clean, and if the steam or the application of the feather be not sufficient, aspiration by means of a soft catheter should be employed. It is well to have two complete canulas, the one to be taken out and cleaned, while the other takes its place. The change to be made every 24 to 36 hours. In convalescents where the tube can be withdrawn for only a limited time, the tracheal wound should be kept patent by means of a silver or hard-rubber plug fitted to the plate of an ordinary canula, and just long enough to reach the trachea. The author concludes his paper with the following dictum. The presence of membrane in the trachea in a fatal case of membranous laryngitis after tracheotomy must be regarded as evidence of the want of due care on the part of the surgeon in charge, as much as would the presence of a piece of gut in the inguinal canal after herniatomy, or a calculus in the bladder after lithotomy.

FOREIGN BODIES.

1. Hamerton. Impaction of a foreign body in the pharynx of a child ; teat of a feeding bottle ; removed with difficulty by forceps. Cure. *Lancet*, May 8, 1880.

2. Keating. A pin extracted from the throat of a child æt. 3. *Maryland Medical Journal*, April, 1880.

3. Woolsey. Cockle burr in trachea ; eleven years ; expulsion ; recovery. Case. *Nashville Journ. Med. and Surg.*, March, 1880.

MISCELLANEOUS.

1. BENNETT. Acute menstrual goitre. *Louisville Med. News*, No. 220, ix, 1880.

2. BERGERON. On the physilogical change in the voice. *Thèse de Paris*, No. 168, 1879.

3. COTONI. A contribution to the study of abscess of the neck, consecutive to lesions of the larynx. Paris, 1880, 43 p., 4°.

4. GARDNER. Rouge's operation. *Australian Med. Journ.*, Melbourne, n. s., i, 557.

5. HENDERSON. On influenza; its symptoms, varieties and causes. *Glasgow Med. Journal*, May, 1880.

6. HOWARD. Observations on the upper air-passages in the anæsthetic state. *Lancet*, May 22, 1880.

7. JACKSON. On the affections of speech. *Med. Press and Circular*, March 31, 1880.

8. MIKULICZ. On a method of elevating sunken noses. *Aus d. k. k. Gesellsch. de Aerzte in Wien.*, 1879, 19.

9. PIENIAZEK. Laryngoscopy and the diseases of the larynx and trachea. Krakau, 1879, pp. 603, 8°, with lithographic tables. (In the Polish language.)

10. POORE. Lectures on the physical examination of the mouth and throat. I, *The Lancet*, April 10, 1880, *et seq*.

11. WHIPHAM. Notes on throat cases. *St. George's Hop. Reports*, 1879.

1. **Acute menstrual goitre.** Prof. Bennett reports two cases which he regards as examples of this affection. The first occurred in a well-developed girl of sixteen, who had menstruated but once; six months afterward a large bronchocele, causing intense dyspnœa, was developed. Tracheotomy was performed, and after a short time the patient improved in health, the goitre diminished rapidly in size, and menstruation became regular. The second patient, a healthy girl of sixteen, suffered from a very prominent goitre, which was first observed about the time of the first signs of the menstrual discharge. She suffered from paroxysmal dyspnœa, and, seven weeks from the appearance of the goitre, died of asphyxia.

In the treatment of these cases tracheotomy and blood letting seemed clearly indicated.

6. **Upper air passages during anæsthesia.** Howard proves by means of numerous experiments, the accuracy of which is undoubted, that, contrary to general belief, traction upon the tongue, however great the force employed, does not and cannot raise the insensitive epiglottis during anæsthesia, or, indeed, at any other time.

11. **Notes on Throat cases.** This report consists of a tabulated statement of a large number of cases, such as ordinarily occur in the practice of any throat clinic. A detailed account of several cases is given. But one of these is of special interest, a case of bilateral paralysis of the crico-arytenoidei postici in a syphilitic patient, who, under a long continued course of mercury and the iodides internally, and the Faradic current locally, failed to show any improvement.

In the preparation of this report, valuable assistance has been rendered by Dr. D. Bryson Delavan.

MISCELLANY.

INTERNATIONAL CONGRESS OF LARYNGOLOGY.

The following abstract from a circular letter issued by Dr. Carlo Labus of Milan, will present to all of our readers interested in the speciality of Laryngology, his plan for the inauguration of an International Congress of Laryngologists, to be held in Milan, commencing September 2d, and continuing for four days.

" During September next, there will be held in Milan the International Congresses of Otology and Ophthalmology, and in Turin the one of Hygiene, also international.

" Considering the concourse of physicians there will be at that time in Italy ; that several Aurists are also specialists in diseases of the Throat ; and the special group that Ophthomology, Otology and Laryngology form in the science of Medicine, it appears to us to be a propitious moment in which to inaugurate a

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to be held in Milan contemporarily with those of Otology and Ophthalmology."

" If by answers received from laryngologists (numbering nearly two hundred) to whom this circular has been addressed, we may infer the probability of realizing our project, we will at once inform those interested, requesting them at the same time to notify us if they have either works to present or questions to propose, so as to enable us to form a programme of the Congress."

Titles of papers, in order that they may be published in the programme of the Congress, must be sent to Milan prior to June 20th.

The AMERICAN LARYNGOLOGICAL ASSOCIATION has appointed as Delegates to represent it at the above International Congress, Drs. Louis Elsberg, of New York, J. H. Hartman, of Baltimore, and Carl Seiler, of Philadelphia.

The Second Annual Congress of the AMERICAN LARYNGOLOGICAL ASSOCIATION, was held in New York, May 31st, June 1 and 2, 1880. A full steno-

graphic report of the proceedings, together with all papers read and their discussion, will appear in the pages of the ARCHIVES, commencing with the next issue. The ARCHIVES OF LARYNGOLOGY having been constituted the official organ of the Association.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

On Friday evening, May 28th, the first regular meeting of the PHILADELPHIA LARYNGOLOGICAL SOCIETY, was held at the house of Dr. J. S. Cohen, and the following gentlemen were elected officers for the ensuing year.

President, DR. J. SOLIS COHEN.

Secretary, DR. CARL SEILER.

Executive Committee, DR. HARRISON ALLEN, DR. ISAAC BARTON, and DR. GEO. MCCRACKEN.

After the election, the members present signed the constitution, and the rest of the evening was taken up by the exhibition of some new instruments by Drs. Cohen and Seiler.

ARCHIVES OF LARYNGOLOGY.

ON THE USE OF THE THERMO-CAUTERY IN TRACHEOTOMY.

By Dr. J. BŒCKEL,
STRASBURG.

[Communicated in French.]

DURING the past two years I have performed thermo-tracheotomy twenty times. The first seven observations formed the subject of a paper brought before the Société de Médecine de Strasbourg.*

Discussion of the same subject a second time would demand an apology, had I not to modify somewhat the conclusions drawn in my first essay. My first operations, although presenting advantages worthy of consideration in the use of thermo-cautery, left certain doubts in my mind as to the best method to employ; but now, having acquired greater experience in the management of the instrument, I can, with propriety, affirm its superiority.

Far from me, however, any idea of banishing the older methods of operating. Many circumstances may render the use of the knife obligatory. For my own part I would certainly not refrain from employing the bistoury, should I find it advantageous to use it. But supposing that I were free to choose the moment of intervention, as also to pronounce in favor of one or the other method, I would accord the preference to the one involving the least loss of blood.

The following cases will illustrate my views on the subject :

Gazette Médicale de Strasbourg, 1878, Nos. 9 et 10.

CASE I.—*Croup. Thermo-tracheotomy. Absence of hemorrhage notwithstanding section of the thyroid body. Opening of trachea by the knife, followed by severe hemorrhage. Head extended over border of table. Recovery without consecutive accidents.* (*Patient seen eight months later.*)

On October 17, 1878, I was called in consultation by Dr. Eug. Bœckel, Sr., to Louisa Missner, aged 5½ years, who was suffering under an attack of croup of 24 hours' continuance. Asphyxia being imminent, tracheotomy could not be deferred. I performed it at 7 o'clock at the Maison de Santé, in the presence of Drs. E. Bœckel and Müller, and Mr. Shæffer, medical student. With the thermo-cautery at a dull red heat, I traced a series of dots in the median line of the neck and on a level with the upper rings of the trachea. The skin having been divided, a greatly dilated vein, lying longitudinally on the right side, was brought to view, and it was divided between two ligatures. The muscles were then divided in their interstices, and the thyroid body came in view, well developed. Section of this gland was accomplished *without the loss of a drop of blood.* The trachea being well exposed, I incised it with a narrow bistoury. This act was followed by a formidable hemorrhage. I tried in vain to introduce the dilator into the wound. The excitement of the patient and her efforts at coughing increased the difficulty of the manœuvre. The hemorrhage continued. Without losing a moment, I extended the patient's head strongly over the border of the table, in order to avoid obliteration of the bronchial tubes by the blood. During this act, a tubular piece of false membrane was thrown out, about 7½ centimetres long, and representing a perfect cast of the trachea and bifurcation. Quiet being restored, I took advantage of it to introduce the three-bladed dilator of Laborde into the trachea, and inserted the canula without the least difficulty. The hemorrhage ceased, and after a few fits of coughing, calmness became reëstablished. The operation occupied 12 minutes. The patient was carried to her bed and was soon sleeping quietly. She passed a good night.

October 18th.—Temperature, A.M., 38°; P.M., 38°. The wound measures 3 cm. in length by 2½ in width. It has not enlarged during the night. Not the least swelling of the neck is noticeable.

October 19th.—Temperature, A.M., 39.5°; P.M., 38.5°. Condition very satisfactory.

October 20th.—Temperature, A.M., 38° ; P.M., 38.1°.

October 21st.—Temperature, A.M., 37.3° ; P.M., 38°. Begins to take food.

October 22d.—Temperature, A.M., 37° ; P.M., 37.1°. Canula withdrawn ; the wound commencing to granulate ; here and there a few grayish spots, resulting from the cauterization, are in course of elimination.

October 24th.—The wound granulated over its whole extent ; the patient utters a few sounds.

October 27th.—She leaves her bed for the first time, the tracheal wound being completely closed. She is now able to speak in full voice.

On the 9th of November L. was discharged from the hospital. The external wound is no larger than about the size of a pea. It was cauterized with lunar caustic and covered with a piece of adhesive plaster.

On the 20th, cicatrization was perfect, the cicatrix being thin, pliable, non-adherent to subjacent tissues, nearly circular in form and about the size of a 50-centimes piece. Respiration and phonation normal.

The patient was seen eight months after the operation. Her recovery had been complete.

CASE 2.—*Pharyngo-laryngeal diphtheria. Thermo-tracheotomy without loss of blood. Rapid Recovery. No consecutive accidents.* (*Patient seen thirteen months later.*)

E. Deibel, aged 4 years, was brought to me in consultation on November 2, 1878, in the last stage of croup. I at once sent him to the Maison de Santé, and with the assistance of Mr. Spraul, medical student, and of the Sisters on duty, I performed tracheotomy at half-past one o'clock in the afternoon. The operation was comparatively easy, notwithstanding the patient was stout and tolerably fat. *Not a drop of blood was lost.* The trachea was divided as usual with a small bistoury. The introduction of the canula presented no difficulty. The operation occupied but 4 minutes. The wound measured 3 cm. in length by 7 mm. in width. Before sending the patient to bed, I swabbed the pharynx, which was covered by large diphtheritic patches, with pure tincture of iron, and prescribed internally liq. ferri perchlor., gtt. x. three times daily. I then had the patient placed in bed. Temperature, 38° C.

November 3d.—Temperature, A.M., 37.6° ; P.M., 39.4°. The wound has increased somewhat transversely. Two tubular false membranes were discharged, cast off from the large bronchi.

November 4th.—Temperature, A.M., 37.5° ; P.M., 38.2°. Patient's condition very satisfactory. No swelling of the neck. Ordered milk and beef-tea.

November 5th.—Temperature, A.M., 37.3° ; P.M., 38.2°. Slight redness around the wound. No expectoration. The pharynx has regained a more natural aspect. No cough.

November 6th.—Temperature, A.M., 37° ; P.M., 37.5°. Withdrawal of canula.

November 8th.—The patient begins to talk. The redness around the wound, resulting from the radiation of heat from the instrument, has disappeared. The wound is granulating over its whole extent, and seems to have increased in breadth and to have diminished in length. No trace of eschar.

November 10th.—The patient speaks in loud tones, and the tracheal wound is no longer visible.

November 12th.—The patient leaves his bed for the first time, the wound being perfectly smooth and about the size of a 20-centimes piece.

November 19th.—Discharged. The wound, then about the size of a small Lima bean, is covered with adhesive plaster.

December 5th.—Cicatrization complete, the cicatrix being hardly visible, and measuring 15 mm. in length by 5 in width.

I saw my little patient 15 days later, and then again after an interval of 13 months. Respiration and phonation had been normal all along.

CASE 3.—*Laryngeal diphtheria. Thermo-tracheotomy without hemorrhage, notwithstanding section of the thyroid body. Temporary strabismus of left eye. Recovery without consecutive accidents.* (*Patient seen at the end of* 14 *months.*)

Emma Keller, aged 4 years, had laryngitis since November 16, 1878. On the 23d, croup was well developed. Being called to the patient for the first time at 9 o'clock in the evening, I found her in the following state : Extreme agitation ; pulse, 144 ; cold sweats ; eyes bright and injected ; croupal cough and respiration ; epigastrium strongly depressed ; lips dark red ; coated tongue ; tonsils and pillars normal. Notwithstanding the intensity of the dyspnœa, I thought surgical intervention could still be postponed.

At 12 o'clock on the 24th, asphyxia being imminent, I had the patient carried to the hospital, and performed the operation with the assistance of Dr. Henninger and Messrs. Ruhlmann and Rahltenthaler, internes on duty. The skin and subjacent tissues were rapidly divided. Section of the thyroid was accompanied at first by a flow of blood, which was promptly arrested by the thermo-cautery. The lips of the wound were held apart by means of blunt hooks, and the section of the gland accomplished bloodlessly. The incision in the trachea, performed with the bistoury, gave rise to a venous hemorrhage, soon followed by the ejection of a thick false membrane 6 cm. in length, tubular in form, and presenting a cast of the trachea with its bifurcation. The introduction of the dilator and canula was easy. The wound measured 2½ cm. in length by 2 in width.

On the 27th, the wound had enlarged transversely, the condition of the patient being good.

On the 29th, the canula was withdrawn at 9 A.M. The wound measures 3 cm. in length by 3 in width. It is covered by a thick grayish eschar, emitting a fetid odor. Abundant suppuration accompanied with fetid muco-purulent expectoration. An erysipelatous patch extends around the thigh from the groin to the gluteal region. Genital organs and region of arms normal. The day is passed comfortably with a temperature of 40° C. Withdrawal of canula permanent.

On the 30th, the expectoration is somewhat less abundant. Temperature, P.M., 38.8°.

On December 1st the wound was enormous, measuring 5 cm. in length by 5 in width; granulation is commencing; suppuration very abundant and fetid.

On the 3d, there was convergent strabismus of the left eye, due to the influence of the diphtheritic intoxication. The wound cleans off.

On the 8th, the state of the patient was more satisfactory. Bronchitis had disappeared, expectoration and suppuration were less abundant, and the wound had diminished in size and was granulating over its entire surface. Strabismus was less pronounced than the day before.

On the 15th, strabismus had completely disappeared. The wound measured 4 cm. in length by 2 in width. Suppuration insignificant.

On the 23d, the voice returned. The trachea is no longer visible at the bottom of the wound, which is now reduced one-half

in size, and is level with the surrounding parts. Final cicatrization on January 4th, with voice and respiration normal.

Patient discharged on January 6th.

I saw my little patient several times during the year, and still more recently (January, 1880) I was able to ascertain that notwithstanding the great extent of the wound during her stay at the hospital, no cicatricial contraction had taken place, and that no permanent trouble had remained in either larynx or trachea. The cicatrix, having the form and size of a 1-franc piece, was smooth, thin, and mobile upon the subjacent parts.

CASE 4.—*Pharyngo-laryngeal diphtheria. Thermo-tracheotomy. No hemorrhage during the section of the thyroid body. Arrest of respiration; rapid termination of the operation with the knife; abundant hemorrhage. Death at the end of 36 hours by generalization of the disease.*

Eliza Dohler, aged 5 years, had suffered from bronchitis for several days. On November 25, 1878, her respiration became embarassed and her voice hoarse. Diphtheritic patches appeared upon the tonsils. Being called in consultation by her attending physician, Dr. Flocker, we examined her at 5 o'clock in the evening, and decided not to operate quite yet. Fifteen drops of the tincture of perchloride of iron, three times a day, were ordered.

On the 27th, at 9 o'clock in the evening, respiration became more embarassed, with noisy inspiration; the muscles of the neck were in contraction; the epigastrium was strongly depressed; cyanosis was extreme. Being sent for to perform tracheotomy, the patient was found *in extremis* on my arrival; the skin was cold, the face pallid, the lips cyanosed, the eyes glassy, the respiration hissing, but comparatively little dyspnœa.

I hesitated at first under those circumstances to perform the operation, but not wishing to refuse the little patient this last resort, I had her transported to the operating room, and without losing a minute proceeded to perform thermo-tracheotomy, with the assistance of Dr. H. Wolff, interne, and the other attendants of the establishment. The operation was performed *without the loss of a drop of blood* as far as, and comprising, the section of half of the thickness of the thyroid body. At this moment the respiration, which had gradually been becoming weaker, was suddenly suspended completely. Forced to conclude the operation quickly, I plunged the bistoury by a single stroke into the

trachea. Not the least noise, indicative that air or blood had passed through the opening, was perceived. The blood, however, flowed freely, proceeding from the deeper part of the thyroid gland, to which I applied several hæmostatic forceps, and finally introduced the dilator and canula without much difficulty. The hemorrhage continuing, and respiration not becoming reëstablished, I extended the head of the patient over the border of the table and titillated the tracheal mucous membrane with pigeon feathers ; but all in vain. Artificial respiration was then practised, and a douche of cold water thrown upon the patient's epigastrium ; and at the end of three minutes an inspiration was procured, followed by a violent paroxysm of coughing, which brought on the ejection of two thick false membranes, one tubulated and the other torn and dentated. From this moment the hemorrhage ceased, and the respiration was soon established in regular rhythm.

The pharynx was cauterized with tincture of iodine. The night was passed comfortably.

On the 28th, the temperature A.M. was 38.2° and P.M. 39°. The day passed quietly. Tincture of the perchloride of iron was continued, gtt. xx three times daily.

At 8 o'clock in the evening cyanosis reappeared, despite a perfectly quiet respiration. The child fell into coma and died at 3 A.M.

An autopsy was refused. There is no doubt, however, that the death was the result of diphtheritic intoxication.

CASE 5.—*Laryngeal diphtheria. Thermo-tracheotomy practised without loss of blood. Recovery. Canula retained eight months.* (*Death by pneumonia at the end of eight months.*)

Léon Keller, aged 2½ years and brother of Case 3, contracted croup eight days after his sister, on the evening of November 28, 1878. On December 1st tracheotomy became urgent, and I performed it at the Civil Hospital with the assistance of Drs. Hedlinger, Wolff and Halthenthaler. The child was fat, and the thyroid body well developed.

The adipose tissue entered into fusion from the first application of the thermo-cautery, and had to be removed by the aid of a sponge. Having reached the thyroid gland without loss of blood, an engorged venous plexus presented beneath the instrument. The veins were held asunder on the two sides, and the gland in-

cised with the cauterizer at a dull red heat, this being accomplished, as in the preceding instances, absolutely without any loss of blood. The trachea, being exposed, was then incised with a small bistoury. Not the least "hissing" was heard during this act. The introduction of the dilator and canula was accomplished without any difficulty. Respiration being quickly established, the child resumed a natural color, and soon fell asleep. The incision was 2 cm. in length.

On December 4th erysipelas showed itself on the back, and the temperature rose to 40.4°. Child somewhat weaker.

On the 10th, the wound had increased to three times its former size, measuring 6 cm. in length by 3 in width; the suppuration was copious and fetid. The erysipelas, however, had become limited, and the fever had diminished.

From the 15th to the 23d, several attempts were made at withdrawing the canula, but each time it had to be replaced at the end of an hour.

On the 30th, granulations covered the wound over its entire extent. The general state was excellent. The patient was walking around the wards with the canula *in situ*.

January 7th.— Believing that a polypoid excrescence of the trachea might possibly exist, the patient was chloroformed, and the trachea scraped with a sharp spoon-shaped curette of small size. I scraped off several vegetations from the inferior portion of the aerial canal, and then cauterized their points of implantation with lunar caustic.

On the 11th, it was found impracticable to withdraw the canula definitively, despite the operation above recorded.

On February 8th attempts were made to catheterize the larynx through the tracheal wound, but without result. The wound is cicatrized, save around the orifice of the canula.

On the 13th, the patient left the hospital, a valved canula having been made for him. Despite this expedient the voice remained completely abolished. Several applications of galvanism, intended to improve phonation, failed to ameliorate the condition of the little patient.

I saw him several times during the following summer. His general health was excellent. There had been no change as to the functions of the larynx.

On July 8th he contracted a severe pneumonia, which terminated fatally on the seventh day.

At the autopsy, adhesions connected the two vocal cords along

their entire length, save at a point hardly admitting the point of a stylet. It was doubtlessly due to the elimination of diphtheritic pseudo-membranes on the denuded surfaces of the vocal cords, that they became agglutinated and soldered together.*

Case 6.—Mathilda Malter, aged 2½ years. Diphtheria. Thermo-tracheotomy performed at hospital on January 6, 1879, at 8 P.M. Operation bloodless excepting the incision into the trachea, which was made with the bistoury. No false membrane. Throat free. On the 8th, considerable œdema of the neck with engorgement of the submaxillary glands. On the 10th, gangrenous spots extending as far as the sternum. On the 12th, gangrene had reached down the thoracic region as far as the xiphoid appendix. Death on the 14th.

Autopsy.—Double pneumonia; ulceration of the trachea on a level with the lower end of the canula.

Case 7.—A. Gretner, aged 4 years, sent to me March 22, 1879, by Dr. Flocken to undergo tracheotomy. He was affected with diphtheria of the pharynx, larynx, left index, and lobule of the right ear. At first I refused to perform the operation on account of the weak state of the patient, but I consented at the solicitation of its parents.

Thermo-tracheotomy *in extremis*, March 24, 1879, at 5 P.M., at the private hospital of Mmes. Diacomsses. Absolute absence of hemorrhage notwithstanding section of the thyroid body. Section of the trachea with the thermo-cautery. Benzoate of sodium internally, and externally by inhalation (5 per cent.). Results favorable. Canula withdrawn on the sixth day, and recovery complete at the end of three weeks. Discharge on April 25th. The patient has been seen several times since. No constriction of the trachea took place, notwithstanding the section of the canal with the instrument at red heat.

Case 8.—Elisa Bolcher, 23 months. Diphtheria of two days' duration. Thermo-tracheotomy, bloodless, on January 26th, with patient *in extremis*. Death on the 28th, of diphtheritic toxæmia.

Case 9.—Solanné Huher, 7 years. Operation at Civil Hospital on July 10, 1879, occupying but five minutes. Absolutely bloodless, notwithstanding section of thyroid gland. Trachea opened

* The pathological specimen was brought before the Société Méd. de Strasbourg. (See *Gazette Méd. de Strasb.*, 1879, p. 12.)

with thermo-cautery. No consecutive hemorrhage. Diphtheria, however, made rapid progress, and the patient died on the 18th of the same month.

Case 10.—Alfred Binote, aged 4 years, brought to the hospital July 14, 1879, to undergo tracheotomy. Intense diphtheria of pharynx and larynx. Thermo-tracheotomy, with section of the thyroid body, both without loss of blood. No consecutive hemorrhage. Diphtheritic toxæmia, and death on the 17th.

Case 11.—*Laryngeal perichondritis. Œdema of the glottis. Thermo-tracheotomy without hemorrhage. Death.*

Madeleine Duvivier, aged 47 years, entered the Civil Hospital on May 15, 1879. She was of medium height, of strong constitution, and portly; and for several weeks had been subject to fits of suffocative dyspnœa. On entering the hospital she was cyanosed, with stridulous respiration and with epigastrium strongly depressed. Tracheotomy was performed at once with the thermo-cautery. The operation was rapidly executed notwithstanding the thickness of the neck, great excess of fat, and great dilatation of the veins, which were held to the two sides by means of blunt hooks. Not a drop of blood was lost. The trachea was incised with the bistoury, and a canula of large size introduced by means of an ordinary dilator. Respiration was at once restored in rhythm, the face resumed its normal color, and everything became orderly.

On the 18th, at 2 P.M., her respiration again became embarassed. The canula was withdrawn to be cleansed, but the situation did not undergo amelioration. The dyspnœa became more and more intense. Auscultation of the lungs did not reveal anything abnormal. The heart, likewise, performed its functions well. Nothing seemed to explain this sudden and unexpected aggravation. Death took place at six o'clock the same evening.

The autopsy, performed by Dr. Recklinghausen, revealed extensive œdema of the aryteno-epiglottic fold, especially on the left side. The arytenoid cartilage of the same side was floating in a cavity filled with pus; it was necrosed in its entire extent. Lungs and heart were normal. Nothing in the other organs was found capable of explaining the cause of death.

Case 12.—Leon Kauffman, aged 2½ years, attacked with pharyngeal diphtheria about to invade the larynx. On December 3d Dr. G. Levy called me in consultation to perform tracheotomy. The operation was performed with the thermo-cautery, in the pres-

ence of Prof. Eugene Boeckel and Drs. G. Levy and Halthenthaler. It was completed in four minutes. Not a drop of blood was lost notwithstanding the section of the thyroid body, a fat neck and strongly dilated veins. Benzoate of sodium internally and by inhalation. Sequelæ favorable. No consecutive hemorrhage. Withdrawal of the canula on December 10th (7th day). Final cicatrization on the 23d day. The patient was seen several times since, and respiration and phonation were perfectly normal. The cicatrix had become thin and soft, and was about the size of a 20-centimes piece.

Case 13.—Fanny Michel, aged 5 years. Diphtheria of the larynx since April 3, 1880. Brought to the hospital to undergo tracheotomy. While being placed in bed a violent fit of coughing caused her to reject a false membrane, tubular in form, about 3 cm. long, and giving a cast of the trachea. The night was passed quietly. On the 4th, she ejected two membranes resembling the previous ones. On the 6th, she became suddenly worse, the face became cyanosed and dyspnœa was very intense. Preparations were then made to perform thermo-tracheotomy, but hardly had the skin been incised when the little patient ceased to breathe. Artificial respiration was at once resorted to, and then, without losing an instant, a bistoury was plunged into the trachea and the canula introduced. Artificial respiration was continued for nearly a quarter of an hour, and then electricity was applied to the muscles of the neck and diaphragm, but everything was in vain,—the death was real.

If this case had not appeared to me replete with instruction, I might properly have passed it in silence as not entering into my subject. The thermo-cautery cannot be accused of having caused the death in this particular instance. It was actually used merely to divide the skin, upon the accomplishment of which, the patient ceased to breathe. She was actually dead at the moment when I plunged my bistoury into her trachea. I believe that the extension practised upon the head, for the purpose of rendering the neck prominent, may be regarded as the cause of the fatal termination. By the act of this extension, the calibre of the air passages, partly obliterated by false membranes, is found sufficiently diminished to excite a fatal spasm of the glottis. This, in my opinion, is the only plausible explanation.

The autopsy, performed at the institute of Prof. de Recklinghausen, in revealing the presence of false membranes extending as far as the left medium bronchi, confirmed my opinion ; and had it not been for the mechanical action explained above, the result, although leaving no doubt as to its character, would, at least, have been less sudden in its occurrence.

Case 14.—Jacques Duha, aged 3 years, sent to me by Dr. Gerhardt. Pharyngo-laryngeal diphtheria. Thermo-tracheotomy (without hemorrhage) on February 16, 1880. On the 20th, violent hemorrhage, not from the wound, but originating from the interior of the trachea, and due doubtless to ulceration of its mucous membrane by the end of the canula. Cold compresses to the neck. Withdrawal of the canula and its replacement by a smaller one. No recurrence of hemorrhage. Definitive withdrawal of the canula on the 26th, and complete cicatrization of the wound at the end of three weeks. Discharge on March 4th. Phonation and respiration normal. No ultimate accidents.

The following cases, having been published already, are summarily added here :

Case 15.—Aaron Salonné, aged 5 years. Croup. Thermo-tracheotomy performed successfully on November 10, 1877, without hemorrhage, notwithstanding section of thyroid isthmus. Recovery on the 21st day without consecutive accidents.*

Case 16.—Maria K., aged 5 years. Thermo-tracheotomy without hemorrhage (February 19, 1878). Ejection of a tubular false membrane. Recovery on the 26th day without consecutive accidents.†

Case 17. Aug. Meyer, aged 3 years. Croup. Thermo-tracheotomy performed March 18, 1878. Serious hemorrhage, arrested by compression with forceps, and with the fingers. Cicatrization of the wound on the 27th day. Respiration and phonation normal. Discharged. Sudden death on the 32d day, following exposure to cold (probable acute œdema of the glottis). For further details consult Case 3 of my first memoir.

Case 18.—Charles Welche, aged 3 years. Croup. Thermo-

* *Gâzette Médicale de Strasbourg*, 1878, Nos. 9 et 10.

† *Ibid.*

tracheotomy (April 10, 1878). Insignificant hemorrhage, arrested by digital compression. Ejection of false membrane from the larynx. Hemorrhage on the 5th day, due to ulceration of the trachea by the canula. Recovery on the 24th day.

Case 19.—A. B., æt. 23 months. Pharyngo-laryngeal diphtheria. Thermo-tracheotomy, including section of thyroid body, without hemorrhage. Tubular false membranes in great number. Generalization of the disease. Pseudo membranous bronchitis. Death on the 4th day (May 29, 1878).

Case 20.—E. Frantz, 5½ years old. Croup. Thermo-tracheotomy. No hemorrhage. Ejection of false membranes in great number. Recovery. No ulterior accidents (August 13, 1878).

Case 21.—Marie Schwartzwälder, aged 3½ years. Laryngo-pharyngeal diphtheria. Thermo-tracheotomy (September, 1878) bloodless. Section of the tracheal mucous membrane performed with bistoury; slight hemorrhage. Tubular false membrane extending from the larynx to the bifurcation of the bronchi. Death by double pneumonia on the 4th day.

In our 21 cases, we count 12 recoveries and 9 deaths: a mortality of 42.9 per cent.

Leaving aside Case 13, which has no place here, we find that there was no hemorrhage in 18 cases out of the 20 (Cases 1 to 12, 14 to 16, 19 and 20). Once only was it really grave, for the reasons given in my first paper, the absence of competent assistants playing an important part.

In almost all my cases the thyroid body was divided bloodlessly, with the instrument in incandescence. The reproach formerly addressed by Mr. Desprès against thermo-cautery in these terms, "The procedure involves the isthmus of the thyroid body; consequently it cannot be hæmostatic," * seems to me a reproach, then, far from being well founded. For my part, I have sufficient reason to consider it as an advantage. The possibility of dividing the thyroid gland without hemorrhage, instead of having to push it upward or downward, singularly facilitates the operation. The trachea at the level of the thyroid body is more superficial; it can be divided at this point with the greatest security, for it is not necessary to take into account

* Bull. et mém. Chir. a Paris, 1877, t. iii.

the sub-thyroidean venous plexus, a well-known cause of serious trouble.

This said, however, I would not wish to be considered as hostile to the use of the bistoury. The facts presented in my first paper prove that hemorrhages have never been excessive, and that my operations have always terminated well. It is to the thermo-cautery that I shall have recourse every time that circumstances will permit it; for I have acquired the conviction that it insures absolute hæmostasis when it is handled with prudence.

The twelve new cases which form the subject of this paper fully justify my opinion.

The question of secondary hemorrhage need not deter us; this complication not having occurred once in the twelve operations. The hemorrhages occurring on the 4th and 5th day in Cases 14 and 18, were not in consequence of the falling of eschars; the bleeding came from the interior of the trachea, as ascertained by careful examination. No doubt exists on this point. The extremity of the canula had ulcerated the mucous membrane and brought on this accident, happily of but little importance.

The incision into the trachea by the bistoury, on the contrary, has caused me serious apprehensions in 4 cases, (Cases 1, 3, 6 and 21). In my first case especially, the blood flowed in such quantities that the head of the patient had to be extended over the border of the table to prevent obstruction of the bronchi.

In two special cases (7 and 9) with deeply congested necks, I divided the trachea with the thermo-cautery to avoid such a misadventure. This mode of procedure did not present the least inconvenience, as I was able to verify in one of my cases a year after the operation, as has likewise been established by Mr. Verneuil some years ago.

As far as regards the accidents due to the fall of the eschar, I cannot but repeat here what I said before.

The fear of a tracheal constriction, consecutive to the use of the thermo-cautery, enters into the domain of hypothesis. In reality this complication has never taken place. Twelve of my cases recovered. With the ex-

ception of two, they were under my close observation for a year or more; and I can assert that in none of them was there the least symptom exciting suspicion of a constriction of the trachea. The regularity of the inspiratory functions, the absolute integrity of the voice in most of them, and the absence of stridor, confirm my assertion.

I have shown, in the course of the preceding observations, the cause of death supervening in one of my cases on the 32d day, and in the other at the end of eight months; and I need not insist here that the thermo-cautery was an entirely foreign factor in their fatal termination.

REMOVAL OF A TRACHEAL NEOPLASM BY OPERATION THROUGH THE NATURAL PASSAGES.

By Prof. CARLO LABUS,

MILAN.

[Communicated in English.]

BUT two cases of tracheal tumors are on record, the removal of which was attempted by operations through the natural passages.* The first is the well known case of Schrötter,† in which that operator, after unsuccessful attempts at removal with laryngeal forceps, successfully injected a solution of sesquichloride of iron into the parenchyma of the growth, with the purpose of inducing mortification of its substance. A recurrence rendered further interference necessary toward the end of the third year (1870); and several ineffectual attempts at its destruction were made with the galvano-caustic snare, galvano-caustic point, and by cauterization with a paste of chloride and oxide of zinc, these operations being performed under local anæsthesia from alternate pencillings with chloroform and strong solution of morphia. Schrötter subsequently succeeded in wrenching portions of the tumor off with hooked forceps; and finally resorted again to the parenchymatous injection

* This article had been committed to the printers' hands before the appearance of Dr. Morell Mackenzie's *Manual of Diseases of the Throat and Nose*, on the 524th page of which two cases are cited of tracheal tumors destroyed by him with the galvano-cautery, applied through the natural passages.

† Wiener med. Jahrb., 1868, Bd. 15; und Jahresbericht der Klinik für Laryngoscopie. Wien, 1880. pp. 80–85.

of liquid sesquichloride of iron by means of a sharp-pointed, curved syringe passed through the mouth and larynx. These succeeded partially, only, in inducing efficient mortification of portions of the neoplasm; and it was finally decided to await further developments. Two years and a half later, Schrötter found the tumor to have reacquired the size of a filbert,* but the patient's respiration was so little impeded that he declined to submit to further local interference.

Stœrck † examined this same patient in the winter of 1878–9, and found the tumor so large as nearly to fill the caliber of the windpipe. Tracheotomy was proposed as a means of access to the tumor, but was refused.

The second case is also related by Schrötter,‡ who diagnosed a tumor in the upper part of the trachea of a girl nineteen years of age, of much the same appearance as in the other case, and supposed, like the former, to be a sarcoma. This patient died under an attempt by another physician to repeat Schrötter's method of injection. Microscopic examination of the growth corroborated Schrötter's diagnosis of sarcoma.

In these two cases the laudable spirit of initiative procedures exhibited by the operators was not crowned with the results hoped for.

I am happy to add a case of my own to this record, in which operative procedure through the mouth has succeeded as completely as could be desired.

On the 17th of last January, my distinguished colleague, Dr. Viganoni of Monza, brought to me in consultation a miserable pale-faced boy, suffering with labored respiration, audible at a distance; his state, in fact, being such as to inspire compassion in all who saw him.

I thought it preferable to examine the upper aerial passage at once, and defer the anamnestical research and that of all the phenomena discoverable through other diagnosti-

* *Jahresbericht der Klinik für Laryngoscopie.* Wien, 1875. p. 102.

† Klinik der Krankheiten der Kehlkopf. Stuttgart, 1880. p. 439.

‡ Op. citat.

cal means until afterward. I soon discovered the cause of the dyspnœa, and showed it to my colleague present. Through the glottis, down in the windpipe was seen a granulated mass that clogged nearly all its calibre. With this discovery the therapeutic indication was evident—destruction of this neoplasm.

As the boy had not come to Milan expecting to remain for the necessary treatment, I consented to his return home, in order to make arrangements for a stay of some length in this city.

On the 20th of January this poor boy appeared at the dispensary for diseases of the throat at the Grand Hospital.

Here are all the clinical data that I have been able to collect :

His name is Emilio Fossati, born at San Lorenzo near Monza, of healthy parents ; he is free of hereditary or contracted disease ; and, until the present time, never suffered from a serious illness. He related that at ten years of age he commenced to work in a manufactory of wool and cotton stuffs, where he was employed to fill shuttles. Although in a dusty atmosphere, his health continued good during the first two years ; but later, he became annoyed by a dry, persistent cough, excited by a tickling in the wind-pipe. All the usual simple remedies administered to him by his parents being without success, he applied in the spring of last year to be admitted into the hospital at Monza, whence, after a few weeks' sojourn, he withdrew, cured.

Returning to his work, the cough soon recurred, not only with the same symptoms as before, but with the superaddition of a difficulty of respiration, which was more perceptible when he made any physical exertion, and which no longer permitted him to run when at play with his companions.

The difficulty of respiration gradually increasing, Fossati requested to be readmitted into the hospital of Monza, where he was received on the 14th of last December.

During his stay there, plasters and absorbent ointments were applied to his neck ; but not improving at all, and, indeed, growing worse, he left the hospital on the 5th of January and returned home.

The dyspnœa, however, increasing and becoming alarming, in about ten days his parents took him to consult Dr. Viganoni, who, recognizing the gravity of the case, brought Fossati to me, to see

if I could discover with the laryngoscope the cause of the stenosis that evidently appeared to be located in the upper aerial passages.

Here is the result of the examination of his state at that time :

He is 13 years of age ; impubescent ; his frame is tolerably well developed, but rather emaciated. The pale face and the pale mucous membranes, the dark-rimmed and hollow eyes, and a general shrinking from the cold, which he feels to an extraordinary degree, complete the portrait of a person a prey to great suffering.

When quiet, his respiration, although loud, is tolerably calm ; but exercise, or any fatigue, however slight, soon provokes a violent dyspnœa, when, without any descent of the larynx in inspiration, the upper clavicular spaces are seen to become more deeply depressed, and the jugular fossa to recede further, and the hissing sound in respiration is heard more distinctly. The position in which he breathes most freely is when seated with the head bent slightly forward, because this, by narrowing the intercartilaginous spaces of the windpipe, favors the enlargement of its caliber. In a reclining position he feels as if suffocating ; and at night, when in bed, in ill ventilated rooms and in an atmosphere vitiated by an accumulation of occupants, the dyspnœa becomes so violent as to produce real paroxysms of suffocation.

To the dyspnœa is added a dry, persistent cough, that continually annoys him, sometimes with violent paroxysms that leave the sternal regions in a painful condition. The voice is sonorous and pure in quality, but without intensity, owing to the want of aerial pressure. There is no characteristic expectoration.

Physical examination of the chest does not show any irregularity upon percussion ; and the auscultatory phenomena cannot be appreciated at their just value because of being overpowered by the tracheal hiss. The sound of percussion on the larynx and on the windpipe does not differ from that at the point where the tumor is located ; and upon auscultation of the trachea, nothing is heard but a hissing sound. Upon palpation, these organs do not show any painful sensitiveness.

In the apparatus of circulation nothing abnormal is observed, except a weak and accelerated pulse.

As for the digestive organs, as well in the upper passages as in the gastro-intestinal part, no disease is discovered ; there is only experienced a want of appetite ; the act of swallowing, even, is neither difficult nor painful.

Besides this, Fossati has not, and never has had, fever.

His remarkable emaciation proceeds evidently from lack of bodily exercise, and from the scant supply of food that he takes with the view of not overfilling the stomach and causing, consequently, an increase of dyspnœa ; from the insufficient oxygenation of the blood; and from the impossibility, latterly, of satisfying the desire of sleep, so necessary at his age.

Upon reëxamination with the laryngoscope, I found the epiglottis of small size, folded at the edges, and somewhat depressed over the upper laryngeal orifice, as is usual in impubescents ; the remainder of the larynx is also small in proportion to his age.

All the different parts are found in an entirely normal condition, and even the movements are performed accurately.

When the vocal cords open in the act of respiration, there is seen below them a granulated tumor, of a reddish hue, that occupies in a great measure the lumen of the air passage, leaving free the anterior segment only.

The tumor does not move even under strong inspiration or expiration. It is impossible to establish whether it is placed on the posterior wall or on the lateral walls, the tumor itself covering the exact point of its base. From the fact that only the anterior segment of the cricoid cartilage is visible, it may be affirmed, however, that it must be located on a level with the first tracheal rings.

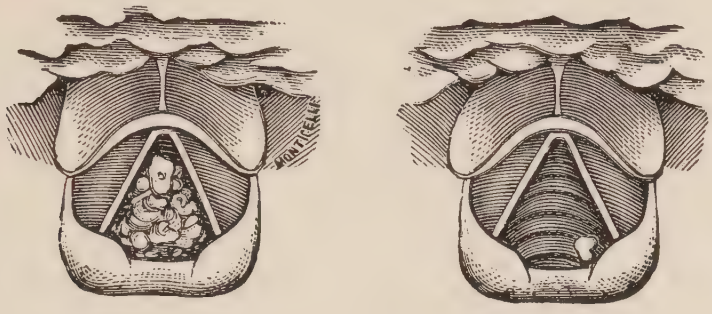
My colleagues, Dr. Frua, my assistant, Dr. Margary and Dr. Baiardi, of Turin, and Dr. Salomoni of Cremona, who were present at the visit at the dispensary, having each one in turn examined Fossati with the laryngoscope, and declared the presence of the above-described tumor, I decided at once to attempt its removal.

Without having made preparatory soundings to enable the larynx to bear the instruments, I took Türck's forceps in which I had made a long curve, so that the vertical portion was eight centimeters in length, and had given to the branches an anteroposterior direction, and placed it in the upper laryngeal orifice ; and then, guided by the laryngoscope, in a moment of profound inspiration, I lowered it into the larynx, passed it between the open vocal cords, and, at this moment, opening the branches of the forceps, seized and held the tumor. When I withdrew the instrument the tumor was caught in its branches.

The operation was performed with such rapidity that those who were watching the procedure, did not perceive that it had been already accomplished.

The slight dripping of blood caused by the wound, and the consequent cough to throw it off having ceased, Fossati immediately realized that his respiration had become perfectly free.

Reëxamined by my colleagues and myself, we discovered that there still existed a piece of the tumor about the size of a hemp seed, between the left lateral and posterior wall of the wind-pipe, on a level with the third ring. In the two illustrations here presented, the laryngoscopic images before and after the operation are depicted in the natural size.



Whether on account of the cough or the repeated examinations, Fossati could no longer endure even the simple application of the laryngoscopic mirror, so that the attempt to remove the small part of the tumor still remaining was postponed until the following day.

On January 21st the patient returned, and, with a beaming countenance, said he had slept comfortably all night, which he had not done for a long time. No blood had been expectorated except a few clots toward evening, and locally he only experienced a more marked sensibility. The respiration was entirely free. Having examined him together with my colleagues who assisted at the visit at the dispensary, we saw distinctly the remainder of the tumor as shown above in the figure.

In the same manner as on the preceding day I succeeded in removing this also, and only a slight elevation remained in its place.

The dispensary being closed the next day, Fossati returned on the 23d. With the same forceps I nipped this elevation, bringing away fragments of tissue.

For two days consecutively I repeated this same nipping, more with the idea of mortifying the base of the tumor than for anything else.

On January 26th a laryngoscopic examination being made by

sunlight, nothing was discovered except a slight inequality at the point where the tumor had had its seat.

On the 30th even this had disappeared. The patient's general health had already improved; he had gained color; his eye had brightened; the appetite was healthy, and he was able to satisfy it to satiety. Upon auscultation of the chest there was noticeable only a short, quick respiration at the upper lobe of the lungs, owing certainly to a slight catarrh by hyperæmia ex-vacuo and by the insufficient ventilation of the lungs.

On February 1st, ten days after entering the dispensary, he was dismissed.

Later news informed me that Fossati continued in good health, but I was enabled to confirm the assertion on my own evidence on May 23d, P. M., on which date I examined him with the laryngoscope, and did not discover even the slightest sign of a return of the tumor.

Here is, finally, the result of the microscopic examination of the tumor, made by Dr. Baiardi, and kindly communicated to me. He does not leave unnoticed how much the anatomico-pathological structure of this tumor resembles that of the two cited by Schrötter:

"The tumor is the size of a pea, perhaps larger, round and irregular in form, has a granulated surface of a reddish-white color, and is of rather a hard consistency.

"The surface of the cut, seen fresh, is dry, of a whitish hue, and uniformly smooth.

"In sections made after having been subjected to the usual methods of hardening, the tumor shows at the periphery a squamous stratified epithelium of different thicknesses: the epithelium is soft and delicate, but in certain more superficial epithelial cells, a slight infiltration of horny substance is observed in the cellular protoplasm.

"Immediately under the epithelium exists a strong infiltration of young cells in a narrow stroma of small-fibred connective tissue, numerous capillary blood-vessels, and here and there small blood extravasations of recent date.

"All the remainder of the tumor is formed of connec tive oval and fusiform cells, now disposed irregularly, now in parallel masses, and contained in a fundamental substance, here homogenous, there fibrous, but everywhere scanty.

"In some sections, especially near the base of the tumor, is found quite a quantity of fibrous connective tissue.

"The vessels that traverse the mass of the tumor are very much enlarged, with very thin walls, and are few in number.

"The diagnosis, therefore, can be given as fibro-sarcoma."

INFANTILE SUPPURATIVE TONSILLITIS.

By JOHN J. REID, M. D.,

NEW YORK.

THE following case is communicated in answer to the query:

Does suppurative tonsillitis ever occur in the infant?

On March 14, 1880, I was called to see an infant—male, aged seven months—suffering from what was thought to be diphtheria. The right side of the head, immediately below the lower jaw, was swollen. An examination of the fauces failed to show any membrane. It was, however, quite red. I again saw it on March 21st. During the week that had intervened, the symptoms became more decided. There was inability to nurse, and increased swelling of the neck, with labored respiration.

On examining the throat, no membrane could be discovered. The right side was markedly swollen, and boggy to the touch. Upon the introduction of a bistoury a free flow of pus was obtained.

Complete recovery was established in a day or two.

ATROPHIC PHARYNGITIS OR PHARYNGITIS SICCA.*

By E. L. SHURLY, M.D.,

DETROIT.

THIS very troublesome and often incurable morbid condition deserves, it seems to me, more attention than it has hitherto received—judging from the amount of literature on the subject which I have been able to examine—and, therefore, I desire briefly to introduce a point or two for discussion to-day.

Its symptomatology and pathology are apparently so unanimously understood that their consideration need not detain us, but the etiology and therapeutics are undoubtedly only partially developed.

Most authors dismiss the former part of the subject with stating that "atrophic pharyngitis" is the ultimate stage of chronic pharyngeal, or naso-pharyngeal catarrh, or one of the concomitant expressions of senility, to which may be added the local irritant effect of inspiring through the mouth either simple air or various kinds of dust, while a few ascribe many cases to the scrofulous diathesis. Now this is all true as far as it goes; but these conclusions must be based upon false premises, unless every case of chronic pharyngeal or naso-pharyngeal catarrh, by continuance, will thus terminate; or every case of senility, or local irritation by inspired air or dust, will present this atrophic change in the mucous membrane of the pharynx, with or

* Read before the American Laryngological Association, Session 1880.

without active scrofulous manifestations. It is scarcely necessary to introduce statistics in order to undermine such an untenable position as this, but I will roughly state that of about 200 patients, of all ages, under treatment for various diseases (both hospital and private), whose pharynges I examined, nearly one-half presented the objective symptoms of pharyngeal or naso-pharyngeal catarrh, or follicular pharyngitis; and of these, there were only three with well-marked appearances of pharyngitis sicca. Most of these cases were chronic ones, and the great majority, persons in middle or advanced life.

At the Throat Department of St. Mary's Hospital Dispensary, where are treated, on an average, between twenty to thirty patients daily for nose and throat affections, we do not find more than one in ten with well-marked atrophic pharyngitis. *Again*, of a number of aged persons whose pharynges I inspected (not complaining of the throat), there was no evidence of particular atrophy of the mucous membrane of the pharynx.

Therefore, it appears to me, in the light of this experience, that this morbid condition is neither always an ultimate stage of chronic pharyngeal catarrh, or follicular pharyngitis; nor an accompaniment of old age; nor a condition depending upon so-called scrofula, but a local change which depends not only upon previous disease of the mucous membrane, but upon some peculiar constitutional defect also. In a large majority of the cases which have come under my observation, I have noticed either functional or organic derangement of the stomach or allied organs, and in one or two, a constant tendency to rheumatism; while in few only could the real cause be ascribed to the inhalation of dust, or breathing through the mouth. If scrofula, so-called, were an important factor in the etiology, surely, in dispensary practice, where scrofulous subjects are so strongly represented, we ought to find many cases, which, however, is not my experience.

I therefore believe that before any plan of local treatment is instituted, a very careful investigation of the vital status of the patient should be made, particularly the

primæ viæ, and a proper systematic treatment at once be adopted.

In cases of enfeeblement of the circulatory apparatus—attended or not with asthma or emphysema—I prescribe iron and digitalis, in addition to other treatment. The greatest attention, however, ought to be bestowed upon the digestion and assimilation of food. For this purpose all aids to digestion, where needed, should be constantly kept up; and I find that among the remedies which thus act, *cornin* and *xanthoxylin* (prickly ash) alone, or combined with an acid, are the best. Tincture of calumba and Fowler's solution of arsenic, are also highly beneficial in some cases; while in those the subjects of malarial toxæmia, the sulphate or phosphate of quinine is indicated. In those cases characterized by a constant deficiency or perversion of the hepatic and intestinal secretions, I have found, in addition to general tonic treatment, the use of several large doses of ammonium chloride or sodium phosphate yield excellent results. Cod liver oil and iodine are, of course, indicated in some instances, but great care is necessary in their use, lest by an unfavorable effect upon the stomach, our greatest desire is defeated.

Hygienic treatment and avoidance of all impure air must, of course, be enjoined.

Regarding local treatment, it must be admitted that its effects are too often transient; however, it is not without benefit in almost all cases, for it will relieve more or less that very annoying feature, dryness. Applications of iodine, nitrate of silver, sulphate of copper, petrolina oil, and the galvanic current, have proved most beneficial in my hands. The last—galvanism—I have tried of late quite thoroughly in three cases, with promising results. In one, the case of a lady, aged sixty, the dryness of the pharynx was a cause of terrible distress, she being obliged to rise two or three times in the night to lubricate the throat. Having tried in vain many different agents, I applied as an experiment a constant current—increasing from one to seven cells—from "a Grenet battery." A pharyngeal electrode attached to the positive pole was applied daily for two

weeks, and then every other day, or twice a week, for a period of three months. This gave marked relief—in conjunction with the general treatment—which, so far, is permanent, and it is now over two months since the last application. I will state, however, that she still uses occasionally tablets of muriate of ammonia.

Of the other two cases, the relief was more marked in one, resulting in almost a cure of the subjective symptoms, while in the second, now under treatment, very little relief can be noticed. Both of these were younger. I have tried galvanism in a few other cases, but not constant enough to afford fair clinical data. The great objection to this plan of treatment seems to be the intolerance, by some, of the presence in the pharynx of the electrode, which I found in two instances could not be overcome. It is probably unnecessary to state that the fauces are to be cleansed by spray before the electrode is applied. The duration of the sittings will vary, according to the tolerance of the patient, from three to ten minutes.

It is obvious that the restoration of physiological function in portions of mucous membrane thoroughly atrophied, cannot be expected; our only aim is to stimulate that portion which has yet some activity, to the performance of the necessary work; and this, I believe, can be accomplished in many cases by a well selected and persistent course of general and local treatment.

SOME PRACTICAL SUGGESTIONS IN CONNECTION WITH THE USE OF THE LARYNGOSCOPE IN CHILDREN.*

By GEO. M. LEFFERTS, M.D.,

NEW YORK.

THE special importance of diseases of the larynx in children, an importance more often rendered urgent than in the adult; the frequency of throat troubles—both grave and slight—during youth; the great susceptibility to irritative and secondary changes of the young mucous membrane which is specially affected; and finally, the relatively small caliber of the tube in which the tissues undergo pathological alteration, with consequent quick and early stenosis,—all render the value of a laryngoscopic examination in little patients as beyond question. Few with experience will decry the practical worth of its revelations, or its certainty as a means of differential diagnosis; but still it seems that the subject cannot as yet have been fully appreciated in all its aspects by the profession at large; for we know that until recently but little special attention has been called to it, our knowledge resting mainly upon the excellent essay of Rauchfuss, to which I am indebted for many of the valuable suggestions which follow, and which I have often utilized in practice, and a few monographs by Schroetter, Klemm, and others, found scattered through the literature, if one searches for them. The art is, then, to-day—for special and peculiar art we must term it, when

* Read before the American Laryngological Association, Session 1880.

dealing with children—without a proper place as a distinct subject in treatises devoted to laryngology.

The explanation of this fact lies probably, in part, in the existence of various difficulties, some at times unquestionably great, but just as often more fancied than real, which militate against a successful manipulation of the laryngoscopic mirror in many children, and which difficulties, both moral and physical, have raised a fancied barrier against those necessary attempts, so often discouraging, but through which alone can success be attained, expertness acquired, and experience enlarged. In other words, the subject having been in the past practically thrown aside as impracticable, no progress has been made, commensurate with its importance, toward its elucidation.

I deal, then, with a small part of a question that is comparatively new, the pathology of laryngeal diseases in children being, unquestionably, in many respects, in that undecided, indefinite, as far as actual clinical observations go—shall we say, chaotic state—that characterized precisely the same question in regard to disease of the same region in the adult, some twenty or more years since. Then, as is well known, the revelations of the laryngoscope worked great changes; old-time and fundamental, preconceived and tenaciously-held ideas regarding the pathology, physiology and therapeutics of the organ, were swept away and blotted out. New and intelligent views—views illuminated by the penetrating light of reason, and shown in the clear rays of the laryngoscope, with indisputable facts based upon ocular demonstration—supplanted them, and doubt became certainty. Is it premature or chimerical to believe, then, that many equally important changes—as many cannot be expected—broader views, and more intelligent therapeutics, will follow a search for the truth in the comparatively unexplored field offered in the larynx of the child?

With children laryngoscopy is an art by itself. Expertness with the adult, does not necessarily imply skill in dealing with the child. Obstacles, both moral and physical, unknown in the former, interpose in the latter, and require a special training of both manner and method, as well as pe-

culiar skill and dexterity of hand and eye to conquer them. It is not always the smallest or youngest children who present the greatest difficulties. Tact with experience, practice, and special skill, will alone inform the surgeon how he must deal with a given case; whether he shall explain to the child, in simple words, the purport of his manipulations, and seek to familiarize it with his apparatus, reassure its courage, and acquire its confidence; or whether, on the other hand, he shall proceed at once and forcibly to effect his purpose, always bearing in mind, if the latter be his resolve, that harm may come to his little patient, if he be with stenosed larynx, not alone through the nervous shock of fear, pain and anxiety, but perhaps through that peculiar reflex nervous influence, which the narrowed air-passages have in modifying the action of the circulation, as shown by Riegel and Tuczek.

His little patient, mayhap, shrinks from his hands, into its nurse's arms, with superficial and hurried respiration, small, quick pulse, and pallid surface—almost the symptoms of asphyxia—while he, the incautious observer, has gained not one new point by this examination, and has lost the child's confidence and excited its just fears, a matter of no little import for his own as well as the child's sake. With many children, each consecutive examination succeeds better; with others such successive attempts steadily and progressively increase the ratio of failures. I have examined many children between the ages of five and ten years, even once at three, who would calmly and quietly undergo the necessary manipulations, even, in some instances, hold the extended tongue themselves. I have seen others, still older, in whom mild force was necessary, not once but many times repeated, and finally, have likewise, in not a few instances, a most vivid recollection of my struggles for supremacy and a success which involved both moral and physical discipline, even specious argument and oratorical expense, and were then attended by the most ignominious failure.

The most difficult cases are, undoubtedly, those in which previous prolonged and unskilful treatment of the pharynx, often at domestic hands and with domestic means, often

with force and lack of moral suasion, has rendered the child so nervous, distrustful, and irritable, that at the least indication of an attempt to look into the mouth, especially by a physician, the jaws are firmly closed. Add to this state the element of ugliness of disposition, and the physician has his hands full. His little patient faces him with determined countenance and firmly-closed mouth; the large and learned man looks down upon the small and self-willed child, and is well-nigh powerless.

When necessary in such instances, usually, but not always, in children under five years, to proceed *vi et armis*, it will be found most convenient, without losing any time, to envelope the child's body and arms with a strong towel, pinned closely about them, and then place it upon an assistant's lap, *not* the mother's as a rule; the examiner then takes the child's legs between his knees—not a useless precaution, as every surgeon who has received a small, but vigorous and vindictive kick well knows—holds the child's body well and firmly down upon his lap with his left arm and hand, while with his right over the child's forehead he presses its head backward against his chest, and resists its attempts to turn it from side to side. The mouth is now opened, but by what means must depend upon the nature of the case. Many are advised, but few succeed in practice. The best, perhaps, is to pass the finger (protected by a very serviceable guard made by Reynders), or a small spatula, upon the model of Türck's, through the space found between the alveolar processes back of the teeth, in the child's mouth, and then provoke efforts at retching by pushing it in toward the pharynx. At this same moment the mouth will be opened, when the handle of the spatula is brought forward in front of the mouth, and the tongue properly depressed by quickly placing the blade in position. The surgeon is now master of the situation; dexterity has superseded diplomacy.

Up to the age of three years, Rauchfuss recommends that the spatula be used to depress the tongue in all cases, tolerant as well as intolerant ones. In older children the tongue will usually be extended at the request of the surgeon, as

with adults; then let it be covered neatly by a napkin and held between the fingers—the child's if he will. Some German surgeons do not hesitate to recommend that the tongue shall be seized with forceps and drawn out of the mouth: to mention the procedure is but to condemn it; brutal force will rarely succeed with a child.

The first essentials of success are now, in children, a small laryngeal mirror, the No. 2 or No. 3 of the German scale, rarely a No. 4, and a perfect illumination—the latter not only necessary on account of the small mirror that is alone practicable in so small a pharynx, but likewise on account of the rapidity with which the whole field, pictured in it, must be overlooked at a glance, sometimes a single one alone. Diffused daylight will not answer the purpose; direct sunlight may have to be used in certain instances, where the child is, or would be, frightened by the artificial illuminating apparatus, especially if it be at all elaborate and to the patient more or less mystical. A student lamp or an Argand burner usually excites no apprehension, and the advantage of using their light is so manifest that, practically, no other form need be considered.

Children of from six to seven years of age may frequently be trusted to assist the necessary manipulations. They can be made to understand, with a little explanation, when to phonate the necessary vowel sounds, when to inspire deeply, and the like, and will obey promptly the requests of the examiner, if they have confidence in him; but as, unfortunately, they are not always to be trusted in the matter, the quick but certain and steady introduction of the mirror, after it has been warmed, backward into the pharynx, the tongue being held out of the way, and without waiting for coöperation on the part of the child, is perhaps the most efficacious as well as the best method in the majority of cases.

The first introduction of the glass at a given sitting, is always the most successful; a fact of sufficient importance to be remembered. To examine a child more than twice or three times at one sitting is then useless, and will militate against, perhaps defeat, future attempts. Rauchfuss tells us

that the commonest obstacles to the procedure that are met with, and which interfere physically with a successful examination, are (1) acutely inflamed pharyngeal parts; (2) largely hypertrophied tonsils; (3) collections of mucus and saliva in the pharynx and larynx; (4) violent efforts at retching, and (5) perhaps vomiting.

The first two will often prevent the examination completely. The hyperæsthetic and inflamed pharynx cannot tolerate the presence of the mirror; or the mechanical barrier offered in the hypertrophied masses will oppose its introduction. The collection of mucus in the fauces of young children during the examination is very common; often likewise each attempt at the introduction of the mirror is followed by straining, coughing, and perhaps, especially if skill is lacking, retching, together with fresh and constantly renewed accumulations of saliva and mucus. As long, however, as the glass is not covered and soiled by them, or even if it be slightly so, it should not be removed too quickly, as a quick and sudden inspiration will always follow the coughing and straining, as the child catches its breath, and allows, in the majority of instances, of a momentary, but often complete, view into the interior of the larynx.

Screaming and crying, contrary to what might be supposed, are not disadvantages. The observer calmly holds his mirror in position, and awaits the deep inspiration which must soon follow, and during which he may obtain the desired view.

A very common difficulty is offered in the anatomical form and position of the epiglottis in young subjects. It will always be found more or less depressed, overhanging the larynx, and compressed—rolled together—at its sides. To see beyond, or perhaps better, over it, it is necessary for the observer, perhaps, to stand; certainly to throw the child's head far backward, to carry his mirror well upward into the pharynx, and finally, if possible, to induce the child to phonate the vowel sound "e" as loudly and quickly as possible. Success may thus crown his efforts, unless there be some physical reason, such as acute catarrhal inflamma-

tion and swelling of the mucous membrane covering the cartilage, which render its elevation impossible.

Finally, while enumerating obstacles and considering the extent of the view attainable, it may be stated on personal as well as other authority, that an inspection of the trachea in its upper parts—the rule with adults, during an examination—is with children under ten years an impossibility, as it is likewise not unfrequently with those above that age. If the trial, however, be deemed necessary, and there is certainly no reason why it should not be attempted with older children, the same well-known rules, the position of the head, of the mirror, the deep inspirations and the like, must be observed as in the adult.

In the majority of cases of acute laryngeal disease in small children, a complete and satisfactory result in minute detail is unfortunately seldom attained; but a laryngoscopic examination is on this account by no means to be underrated in importance, nor neglected on account of any personal disinclination to undergo the necessary trouble involved in making it. Foreign bodies, congenital or other tumors, inflammatory tumefactions, the grade of the process and its extent, fibrinous exudation, pseudo-membranes, the differentiation of the anatomical form of the parts and their physiological movements from deviations from the normal standard, can all be seen, their conditions appreciated, and their pathological *status* fixed by even a fleeting glance in the mirror.

If one such glance alone will accomplish results of such diagnostic importance, surely it will be neglected by no conscientious physician in the discharge of his duty.

As bearing upon this point, I remember examining the larynx in an infant only ten days old, who, on account of a peculiar stridor in respiration, was supposed to be suffering from an intralaryngeal and congenital growth. Opening the mouth gently with the finger and introducing the smallest mirror (rhinoscopic) into the fauces, enabled me, without trouble during the inspirations following the cries of the babe, to see perfectly the upper laryngeal parts, and exclude the cause which was suspected. This same method

without drawing out the tongue, or even depressing it, is employed by Rauchfuss with small children during their cries; even the respiration following efforts at retching being utilized for purposes of inspection.

The same result—*viz.*, viewing the upper laryngeal parts—may be attained in still another way; the vestibule of the larynx, the upper part of the lingual face of the epiglottis and its edge are easily seen in children by simply depressing the tongue. Rauchfuss tells us that he even sees the edges of the ary-epiglottic folds. The method is no new one; it has been recommended by Piorry, Horace Green (1852), Voltolini and Tobold. Voltolini recommends in addition to depressing the tongue, that the larynx shall be pressed up by the fingers of an assistant placed over it externally, and even advises that, in order to obtain a better view of the laryngeal aperture, the epiglottis shall be bent downward upon the dorsum of the tongue, by means of a laryngeal probe—a procedure that can hardly be employed in the case of a child, with any idea of success. A small Türck's spatula will be found in practice the best method of accomplishing it,—in part at least,—the curve and roughened under surface of its blade allowing of the base of the tongue being well drawn forward, and with it the epiglottis, which is elevated and slightly bent forward at the moment that the former is strongly depressed.

The mere mention of the word rhinoscopy in connection with the physical examination of the air passages in children will cause even the veteran laryngoscopist to shake his head and look incredulous; still, Schroetter tells us that it is not impossible; on the contrary, often succeeds. But bearing in mind the difficulties which surround the procedure, in a large proportion of adults; remembering, likewise, the use of the necessarily small mirror, and of the tongue spatula, the absolutely—except in rare instances—necessary intelligent coöperation of the patient, and finally the many details, some minute, but all important to success, a surgeon may easily comfort himself if he fails, as he surely will do in the majority of instances where he makes the attempt in children.

Much will undoubtedly depend upon the intelligence and temper of the child. With some it will succeed. Time and patience are only lost in attempts with young children. With those of eight to ten years and upward, a good view, if even a short one and much limited by the small size of the parts, will sufficiently often be obtained to encourage persevering attempts. Where the manipulation can be performed, the great superiority of the rhinoscopic mirror, as a means of diagnosis in the frequent cases of adenoid vegetations at the vault of the pharynx—more frequent, I suspect, than is commonly supposed—over the finger, as recommended by Meyer and others, will require no comment.

I do not doubt but that the thought has occurred to many beside myself, when dealing with unruly children in whom an examination of the upper air passages was all important on diagnostic grounds, that anæsthesia might prove the solution of the difficulties which are encountered; a vain and fleeting hope, however, easily dispelled by a single trial. I need not dwell upon it. The many objections will at once suggest themselves to those familiar with the manipulation and surgery of the throat, even be they not personally familiar with the use of either chloroform, ether, or nitrous oxide. Under the conditions to be fulfilled, their first experience will probably, as with me, be their last.

The means which have commonly been relied upon in times gone by, and which are also largely used to-day, in the examination of the upper air passages of the child, as well as adult—external and internal palpation, and auscultation and percussion of the larynx and trachea—must still play their useful rôle, even though the mirror may come into more general use; and though superseded in certainty by the latter, where it can be used, will supplement it valuably in its suggestive revelations. They will, then, in the future as in the past, be an efficient aid—not an exclusive means—in the cultivated surgeon's hands, perhaps, in certain instances, his only resource and aid to a differential diagnosis.

Far more important, then, is the cultivation of acuteness in ear and touch, the acquirement of skill and dexterity

in manipulation, and the personal and practical experience brought by familiarity with the subject, in the treatment of children's diseases of the larynx than in those of the adult; for in the former, laryngoscopy, our great aid and resource, must from the very necessities of the case, always be an art of limited applicability.

Nor is the acquirement of these arts, especially that of internal palpation, to be lightly regarded as an easy matter. I know of no condition where a *tactus eruditus* is more absolutely essential than in the examination of a child's throat with the finger, during its struggles. The knowledge that we strive to obtain is not inborn, nor does it come intuitively, nor instinctively; it is alone the result of rigorous and careful training, the outcome of repeated,—carefully repeated,—and multitudinous examinations of both the normal and abnormal organ; and one born, finally, of a delicate and appreciative touch. It is no uncommon thing to see the surgeon, with self-confident mien, thrust his finger down a child's throat in pursuit of knowledge; the act is one accomplished with little difficulty; but are its results, from a practical standpoint, as easily gained? To my mind, the information acquired in very many instances, perhaps a majority, —a majority, beyond question, if the finger be untrained and without special experience,—is most problematical.

With a trained touch, however, that the results are often valuable cannot be gainsayed. Changes in the anatomical configuration of the parts, if they are marked (inflammatory tumefactions, especially the presence of foreign bodies, it may be of neoplasms), will make themselves known to the finger; but only, be it remembered, when located at the laryngeal vestibule, above it, or in its immediate neighborhood.

External palpation, likewise, has its merits, is much easier to practise, and supplements valuably the objective examination. All pathological processes in the neighborhood of the larynx and trachea, proceeding either from within outward, or from the outside toward the interior of the air-passages,—displacements of the parts from external or internal pressure, the fluctuation in collections of purulent mat-

ter, and many other allied conditions which will suggest themselves,—certainly offer suggestive and useful points to the careful diagnostician.

Friedreich claims that laryngo-tracheal percussion possesses a scientific interest, unaltered by the introduction of the laryngoscope with its certainty and precision, in the diagnosis of affections of the upper air-passages; while by means of it, the demonstration of pure physical facts, in an evident manner, is possible, and different processes in the interior of the larynx can be relegated to an acoustic expression; and that, aside from these points, the careful review of the results of such percussion will lead to the appreciation of diseased conditions of the parenchyma of the lungs.

Laryngo-tracheal auscultation as an auxiliary aid needs no comment; its value has been long and well recognized.

Singly, perhaps, each of the above-mentioned means has but a limited scope; collectively and intelligently used, they have an unspeakable value; and in the hands of a careful surgeon, one, who, with trained eye, ear and touch, possesses unbounded patience, a cheerful, reassuring demeanor and good temper, will unquestionably place him in a position to cope successfully with that most difficult task in the whole range of laryngology—examination of a sick child.

SUGGESTIONS AS TO THE THERAPEUTIC VALUE OF REST IN THE TREATMENT OF LARYNGEAL DISEASES.*

By BEVERLEY ROBINSON, M. D.,

NEW YORK.

IT has become almost an axiom in the treatment of acute inflammatory affections of a surgical nature to affirm that absolute rest is essential to cure. Take, for example, an acutely inflamed joint, and imagine for an instant the foolishness of a surgeon who would attempt to relieve his patient rapidly and effectually, and at the same time to permit him to walk about continually, or intermittently, rather than to rest quietly in bed. Like treatment seems to any one of us equally foolish if it were a question of a fractured or dislocated limb. Nor is this all. Even medical art has correctly seen in very many instances the great value of rest in the curative treatment of visceral troubles. Quiet and perfect tranquility are counselled wisely to those who are sufferers from an acute cerebral affection. With a similar thought in mind, the chest of an individual who labors under the pain and distress of an acute pleuritic affection is tightly strapped, so as to ensure at least partial immobility. One who suffers from acute enteritis is not permitted to walk, and inflammation of the peritoneum is cared for more particularly still. Not only do we give our patients under these circumstances perfect repose of body, by in-

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sisting upon the importance of their lying flat in bed, but we likewise add repeated small doses of opium to our prescriptions, in order to abolish for the time intestinal peristaltic action.

With regard to the constantly acting organ, the heart, already the minds of physicians are awakened, and they see now the great importance of rest in the treatment of acute endocarditis in the limits of what is possible. No longer has it the terrors of a bygone era, if pathology has taught us sufficiently well to make us force quiet upon our patients. Let the heart do its necessary work, but no more than is required to pump the blood freely through the capillaries. In this way, as is well ascertained, we shall prevent those sclerotic and contracting changes which inevitably lead to deformities of orifices and valves, and hence to subjective symptoms of a most distressing type.

Has this thought been as yet applied to the larynx? Undoubtedly it has, but in a somewhat imperfect and casual way. Sémon, for example, has written an elaborate article in the *British Medical Journal* not long since (January 24, 1880), in which, while he speaks of general and local medication of acute and chronic laryngitis, also lays emphasis upon the special importance of physiological rest. He goes so far even as to affirm that unless this factor in the treatment be attended to by those who professionally make use of their voice, he prefers to abandon all treatment rather than to subject his patient and himself to ignominious failure. Nor is it only in the case of inflammatory laryngeal diseases that strict attention should be paid to the forcible carrying out of this intelligent treatment, Growths in the larynx, nervous affections, maladies of the laryngeal articulations, phthisical ulcerative disease of the larynx, and malignant deposit in this organ, may all be wonderfully aided in their treatment by some attention to a manifest indication.

We are too apt, it appears to me, as specialists, to consider the vocal organ as something apart from the other organs of the economy, and to overlook the first elements

of therapeutical science in our efforts to relieve our patient when in a painful state from lesion of its tissues. And yet if we look only for a few moments to the data afforded us by elementary anatomy and physiology, we cannot stray much longer, I feel convinced, from the narrow path of correct thinking and acting, with respect to laryngeal diseases. How is the larynx formed? What are its special functions? Besides a scaffolding made up of several cartilages of different shapes and sizes, we have soft tissues consisting mainly of mucous membrane, muscular tissue, and of intercellular structure, with many vessels and nerves permeating throughout its various layers. As to its functions you are all equally familiar with them.

1. There is the respiratory function.
2. The function of phonation.

In the accomplishment of the former, the intrinsic muscles of the larynx are almost constantly in action. With each inspiration the chink of the glottis widens, owing to the action of the dilator muscles, and the crico-arytenoid articulation is the seat of a rotatory motion outward. Within a very short lapse of time after the effort of inspiration is accomplished, during which there is a brief period of repose for the larynx, the movement of expiration commences. Although more passive in its character than the movement of inspiration, this act, also, involves effort on the part of some of the laryngeal muscles, even during its most tranquil variety. If for any reason of emotional excitement, as physical exertion, the number of respiratory acts increases in a given time, immediately we shall have an augmentation of activity and force in nearly all the intrinsic laryngeal muscles. And just in proportion as the frequency and force of these mechanical movements increase, so do the friction and irritation caused by the ingoing and outflowing column of atmospheric air, become more notable. Phonation, unlike respiration, is ordinarily a voluntary act which is under the control of every individual man or woman. When, however, an articulate sound is produced, no matter what its tone or character may be, the vocal cords must approximate one another and hence contract and be-

come tense, in a greater or less degree. If instead of ordinary conversation for a limited period, with frequent and relatively long times of repose, the voice is employed continuously and with great power, as in the delivery of an oration, or in singing, the activity which is shown by the laryngeal muscles carries with it the conception of work and strain. How shall I apply these facts to my subject?

First, in regard to inflammatory laryngeal diseases. In acute laryngitis the voice should be kept absolutely still. The respirations should be as quiet as perfect repose of body and mind will permit, and there should be no injudicious attempt made by the patient to use the voice even for the smallest home concerns. The reason is obvious. Every time the vocal cords move, and though it be with diminished power, we shall have prolongation of the disease and somewhat increased difficulty in curing our patients. Do we not recognize the utility of rest in acute pericarditis and acute pleuritis, in which affections every effort is exerted, every agent employed, to secure a measure of quiet? If the heart were permitted to continue acting with great violence and without limitation, would not its serous covering become rapidly affected with permanent changes of a serious nature?

Is it not our wish in inflammation of the pleura always to give immobility, at least of a partial quantity, to the thoracic parieties, and thus to prevent extensive friction of the pleural layers and dangerous exacerbations? Analogous indications must be foreseen and attended to in laryngeal inflammations. In acute laryngitis, stop all conversation and all physical exertion except of the mildest kind, and the probability is that "rest, that great fosterer of repair," will give remarkable results, even without other therapeutic influences. Of course, there is no objection, but rather an advantage, to adjoin to the quieting and antiphlogistic action of rest, a similar one which proceeds from steam inhalations, and the application of cold to the throat.

Chronic laryngitis offers a problem of a different sort. Already the vocal cords are reddened, thickened, and somewhat impaired in function. The main thing we must have

constantly in view, is to change the static engorgement of tissue into a more active circulatory condition, and then to watch and guide this to a normal state. If plastic exudation be thrown out between the intrinsic muscular fibrillæ, it is often a matter of time and patience to get rid of it entirely. And on more than one occasion, already, I have made local applications of astringents during many weeks, at regular intervals, without producing any great or good effect. The last traces of chronic congestion and thickening are, as we all know, extremely slow to disappear; but here again physiological rest is our most reliable means of cure, for if the professional efforts of voice which occasioned these conditions be not arrested, all other treatment will indubitably fail. Repose is what the laryngeal muscles, under these circumstances, most require, and if they do not get it, they rapidly lose all contractile power. Moreover, the laryngeal articulations may become involved ultimately if the needed rest is not taken; and in that case a physical obstacle may be developed, which will render it impossible that either laryngeal mucous membrane, or laryngeal muscles fulfil their normal functions. A question of considerable importance arises with respect to the proper treatment of cases of a subacute inflammatory condition of the larynx, especially in professional singers, or among those in other occupations (lawyers, actors, lecturers, clergymen, etc.), who make an exaggerated use of their voice occasionally, or on each successive day. Should we permit such persons to go on attempting the use of their voice as if the vocal cords were in a normal state, or should we place certain restrictions on its use, or should we interdict absolutely all exercise of the voice—in other words, give to the intrinsic muscles of the larynx complete rest for a period of time, which will vary in length according to differences in local physical condition and in rapidity of march toward recovery? For my part, I do not believe an absolute rule can here be laid down. Manifestly, during the first few days of an attack of acute laryngitis, all conversation, and, in fact, all prolonged and exaggerated use of the voice in speaking or singing, should be absolutely

interdicted. When, however, the voice remains somewhat hoarse and feeble after several weeks, and when, upon inspection with the laryngeal mirror, we find the vocal cords are pink in coloration, and that the mucous membrane covering them is swollen, dry and roughened—adjoined oftentimes to insufficient tension in certain, if not in all, phonetic efforts—should we still forbid, absolutely, even its moderate use? Some singing masters tell their patients dogmatically, but ignorantly, to persist in making efforts to tide over the days and weeks of diseased action, to fight off the effects of a cold, in fact to exert their vocal cords quite as much during their time of "hoarseness" as when their voices are quite clear and of normal power. Other masters, more rationally according to me, tell their patients to abstain from all undue exertion under these circumstances; to do only what is essential to keep themselves from losing too much ground during an attack of cold; in fact, to give their voices partial rest. Others affirm that perfect rest of physiological nature is absolutely required, is essential to cure, and on no account will permit the slightest use of the voice until the inflammatory effects have entirely disappeared.

A "happy medium" course is here the true one to follow. The voice should not be permitted to grow rusty, as it were, from prolonged inaction, but the amount of vocal work must be small; it must be made in detached portions; fatigue must be avoided; and so soon as great effort is required to produce certain sounds, as there is aching pain locally, or a sense of fatigue present, all vocal exercises should be stopped at the time and not resumed again until comparative vocal strength and ability have returned. In this matter singing masters would act far more wisely in referring their patients to a professional larnygoscopist, and abiding, in great measure, as regards the vocal exercises of their pupils, by his skilled judgment. We can see and determine in a manner they never can. They have only the rational symptoms to guide them in making a diagnosis; we have, in addition, the knowledge which is derived from physical signs. We can notice and appreciate with our

small mirror the aspect of the interior of the larynx, and carefully watch how the tensor and adductor muscles act, especially during certain efforts of phonation. If, therefore, the cords cannot approximate the median line and leave a slight oval chink between them, even during an attempt at rendering high notes, it shows an evident vocal incompetency which can only get entirely well in time and by means of judicious treatment, the principal factor of this therapeutic method undoubtedly being *complete rest* to the larynx. An opposite course pursued by an ignorant master of singing would lead to very unfortunate results.

I have already had under my professional care, during many months, patients who have injured seriously a fine natural gift by strict obedience to a false hygienic method. How many there are whose vocal powers have become permanently impaired in this manner those among us are alone aware who have had frequent opportunities of watching the future career of persons thus affected. Usually they have been utterly and wrongly deceived by false assurances of rapid and complete cure while still pursuing their vocations without even temporary interruption or rest.

It is a great source of error in these instances to settle the nature of the case and the extent of trouble simply upon data afforded by intralaryngeal appearances. As proof of the validity of this statement, I affirm: 1st; that I have seen patients whose vocal cords invariably appeared red and inflamed, and who, nevertheless, have shown themselves capable of producing very accurate and full notes both in speaking and singing (see *Am. Jl. Md. Sciences*, October, 1875); 2d; that I have seen other patients whose laryngeal mucous membrane was only slightly reddened, and yet they were incapable of coördinating properly laryngeal movements, because the intrinsic muscles had lost much of their contractile power, owing to intercellular infiltration and consequent compression of peripheral nerve fibres. In the first division I hold that moderate use of the voice is not injurious, but is, on the contrary, decidedly beneficial in its action.

In the second variety we should be, I believe, very care-

ful about permitting the voice to be exercised at all. Assuredly we would not allow any unnecessary activity in inflamed muscles elsewhere situated. Why then give sanction to it in instances in which the intralaryngeal muscles are either the seat of an inflammatory state, or, indeed, of its very direct morbid effects as coming from their lining mucous membrane? Of course we cannot prevent the movements of the intralaryngeal muscles which occur during respiration, but we can avoid the additional strain which surely comes from talking or singing. And just as we should interdict walking to a patient suffering from slight subacute inflammation of the endocardium, which had also affected the force of cardiac muscular contractility, so we should forbid conversation, reading aloud, singing, shouting, etc., to anyone having incomplete paralysis of certain vocal muscles, until their function was to a great degree, recuperated. If we pursue a different course, we shall certainly injure our patients, and perhaps relative disability would give place to abolition of function, or moderate dysphonia to complete and more or less permanent aphonia. These effects are known to follow catarrhal inflammation of the larynx very frequently, and yet how many are there, even among skilled laryngoscopists, who pay attention to indications which are the outcome of them in time to ward off future inconvenience and great regret? The acute attack of laryngitis is not in itself so much to be dreaded, in my opinion, if judiciously treated at the time of its acme, as this unfortunate sequela, which is almost the inevitable consequence of neglect, or rather of a lack of pathological knowledge, which prevents a clear insight into the morbid conditions present, and which fails, therefore, to give proper and apt counsel at a time when it is most required. To show conclusively the influence of rest and its therapeutical value in the amelioration and cure of numerous laryngeal diseases, we have but to consider duly the facts which are known to us all with respect to some of the results of tracheotomy.

First.—In chronic laryngitis of simple or specific nature, whenever the breathing through the larynx becomes ex-

tremely painful and difficult, owing to the stenosis occasioned by these affections, we are forcibly obliged to recur to tracheotomy in order to save life. The introduction of the tube has, of course, in itself no direct curative effect upon the diseased condition in the larynx, which is above it. But indirectly it may produce ameliorative if not curative results in morbidly affected larynges. The air is now carried to a great extent through the tracheal canula, and the nasal organ is almost in complete repose. As a result, even without other treatment, the intralaryngeal appearances will be favorably modified. Rarely do we accomplish a perfect cure in these cases, for the simple reason that the disease has usually been permitted to extend too far before tracheotomy has been performed, and we have already within the larynx either the consequences of cicatricial contractions, or ankylosis of the crico-arytenoid joints through an advance of the morbid condition into their structures. But certain favorable results of rest we are sure to remark: After the lapse of a few days there will be diminished red coloration of the laryngeal mucous membrane, and its soft tissues will become less infiltrated and thickened. Sometimes ulcerations of specific nature will improve and even cicatrize before our eyes, when, previous to the operation, they had remained stationary for a long period.

How can we attribute this local change for the better to the exhibition of specific drugs, for usually the same medicines were given in similar doses previous to the operation of tracheotomy, and are not always persisted in for some weeks after its performance? It is scarcely fair to assume, either, that the good local effects are due wholly or in great measure to the improved general condition, when respiration is rendered easy and a plentiful supply of vitalizing oxygen is thus given to the entire system. I believe it far more probable that the rest given to the larynx by the tracheotomy was the essential remedial agent which exercised its remarkable and beneficial power.

Second.—In nervous affections of the larynx, rest by itself may be curative. Several members of this Association will remember in this connection the instance of a man who was

operated upon by me more than two years ago for spasm of the glottis. This patient wore a tracheal canula during seventeen months, and has now entirely recovered. The wound in the neck is closed, and he breathes normally through his larynx. In this case the cause of the laryngeal spasm has never been discovered. What we do know definitely is, that prior to tracheotomy it resisted all remedial measures of medicinal and hygienic nature employed, and it was only after the expiration of the above long period that he was completely cured of his recurrent laryngeal spasms, through wearing a tracheal canula. Prior to taking out the canula definitely, my patient had not had an attack of laryngeal spasm during six months' time.

Third.—Ulcerative phthisical laryngitis has already been cured more than once by wearing a tracheal canula during several months. And my own conviction is, that this operation is one which in similar condition should be resorted to far more frequently than it is, and at a much earlier date of the malady; resorted to not in view of impending death, and only with the hope and intention of giving temporary relief to great suffering and intense dyspnœa, but claimed to be a procedure which should on every account be adopted, with the belief of permanent recovery from the diseased condition which gave the indications for this treatment.

Ulcerative phthisical laryngitis is certainly not tuberculous in the great majority of instances, and hence, in my opinion, is susceptible of cure. Now rest of its structures, freedom from the irritating contact of the surrounding atmosphere will be just the conditions in which this wished-for result is most likely to be attained. As there are really no valid objections to the operation, even if in the minds of some it appears only tentative, why not give it a fair trial whenever the occasion is present?

Fourth.—In morbid growths of the larynx, there is reason to believe that the rest afforded by tracheotomy is serviceable. I have an example which comes to mind as I write these lines. Some three years since I had under my care a man whose larynx showed a morbid growth of considerable size. A great portion of it, however, was readily removed with the aid of Mackenzie's tube forceps.

This was examined microscopically, and found to contain nested cells, and otherwise to possess the structure of epithelioma. Soon after its first removal, this growth commenced again to show itself, and increased so much in extent, as finally to give a cauliflower aspect to the whole pourtour of the larynx, and caused such difficulty of breathing that tracheotomy was performed in order to save life. The results of the rest thus afforded were truly remarkable. The entire aspect of the larynx changed very rapidly; the cauliflower excresences entirely disappeared after a few months' time, and the larynx became almost as smooth in its pourtour as it sometimes is in the hardened, œdematous condition special to phthisical development. In fact, so far as I was able to appreciate, there was no further progress of the localized cancerous infiltration up to within a brief period of my patient's death. The fatal termination was probably occasioned by secondary malignant deposits in the lungs and other viscera.

Fifth.—In cases of traumatic injury to the larynx, with or without subsequent œdematous infiltration, it is almost marvelous to note the good effects of tracheotomy, and consequently of rest to the larynx and of freedom from irritating contact with air. In a few days after the tracheal tube is introduced, the local inflammatory condition subsides in part, and the patient is again able to breathe through his larynx without difficulty. Such, especially, are those instances in which the upper portion alone of the vocal organ has been burned with scalding water, swallowed designedly or by mistake.

Physiological rest is often attainable by the employment of medicines topically applied within the larynx. We all know, for example, that a condition of irritation of the mucous membrane of the vocal organ may lead to recurrent spasm of the vocal cords, or else to frequent and unruly contractions of the intrinsic muscles. Now, sometimes the local use of some well-known astringent, or sedative, will relieve the spasm, or regularize and control the incoördinate movements in an almost magical manner.

To understand in what way this striking result is effected, it is necessary to bear in mind that the laryngeal

mucous membrane and the intrinsic laryngeal muscles are supplied from the same nerve trunk, *i.e.*, the pneumogastric. Whenever an astringent is applied to the irritated membrane, particularly nitrate of silver in weak solution, it combines immediately with the albumen and mucus with which it is brought into contact, and forms a coating for the interior of the larynx, thus preventing the direct irritating action of the atmospheric air, which, previous to its employment, was the efficient cause of the reflex phenomena mentioned. Owing to the physiological rest thus afforded, we soon have a subsidence, and afterward a complete recovery from the distressing morbid condition.

We are familiar with the importance that physiological rest has in the treatment of an attack of hæmoptysis which takes origin in the lungs. We know that all persons thus affected, and especially during the period of the attack and for some time afterward, should strictly avoid all unnecessary bodily exertion, the object being to quiet the general circulation, and likewise to lessen, as far as may be, the movements of the parts near those which bleed. In this way, as there is less tendency to active hyperæmia through diminished functional activity, so there is less risk of repeated spitting of blood. Not only should all active movements be restricted, but all fatiguing conversation must be interdicted, and the most favorable position given to the chest in view of the locality of the hemorrhage. Physiological rest and a suitable position are indicated peremptorily in the treatment of pulmonary hemorrhage; they are likewise essential as precautionary measures to prevent the return of this dread accident; so important are these means in the arrest and avoidance of hæmoptysis, that an endeavor has been made to make mechanical rest (Heather Bigg, London, 1872) by adapting to the diseased chest-walls an apparatus known as the "lung splint." According to Dobell, this splint acts admirably, and may be arranged so as to be fitted to the special requirements of each individual case. To apply this example to a case of recurring hemorrhage of the lungs, I shall have merely to refer to such an one reported by Dr. Andrew H. Smith in the first number of the ARCHIVES OF LARYNGOLOGY.

Dr. Smith's patient was an actor, who had spat up slightly bloody sputa during 14 months, after prolonged use of his voice. This man had not lost weight, and had no constitutional disease.

The blood in this case seemed to ooze out, under ocular inspection, from the unbroken surface of the right vocal cord, and the quantity of it was rapidly increased by an effort of vocalization. Local applications of tincture of iron temporarily stopped the bleeding, but it started afresh each evening under the influence of the exercise of his vocal powers in acting. Dr. Smith terminates this interesting observation by the following statement: "As the patient could not give up his engagement, and treatment without rest was of no avail, he ceased his attendance until a more favorable opportunity should occur." In cases of primary chondritis and perichondritis of the laryngeal cartilages, if we wish to avoid the formation of abscess and the involvement of the crico-arytenoid articulations, thus leading to anchylosis, we should be careful, above every other remedial measure, to insist upon the importance of rest to the larynx; and should therefore forbid all emotional excitement, all bodily exertion, all unnecessary conversation, From what precedes we can judge sufficiently, I believe, of the great therapeutical value of physiological rest in the treatment of laryngeal diseases. To gain its maximum of effect, let it be coequal, as nearly as possible, with the relative amount of laryngeal disturbance, whether it result from disease or traumatism. Viewed in this light I look upon rest as a great aid to Nature in her efforts. At times it will help her to repel threatening laryngeal inflammation of acute type and serious import; at times it will further and indeed complete the work of repair or cure, even in chronic affections of long duration, more than any other known agent which we shall be able to utilize.

Whenever and wherever we are called upon to treat laryngeal troubles, let us bear in mind that the production of physiological rest is the curative principle upon which most of the good effects attributable to other means—medicinal, surgical, hygienic—in the main depend, and we shall then be willing to give to it its genuine value.

MINUTE ANATOMY OF THE LARYNX, NORMAL AND PATHOLOGICAL.

By CARL SEILER, M.D.

II.

EPIGLOTTIS.

(*Continued from p.* 141.)

THE pathological conditions found in the epiglottis are the same as those found in other parts of the larynx, but modified to a greater or less extent by the distribution of the histological elements in the organ. Thus we find in simple acute inflammation of the mucous membrane a deposit of indifferent granulation corpuscles, together with a proliferation of the epithelial cells lining the glands and their ducts. The loose texture of the submucous connective tissue favors serous infiltration, showing itself as œdema, which, as a rule, gives the organ more or less of a horseshoe shape. This is to be explained by the fact that the transverse fibres of the scant submucous connective tissue on the laryngeal face of the organ, are non-elastic, and that as soon as the meshes become filled and distended with fluid the thin cartilaginous plate of the epiglottis is bent so that its edges come closer together. The cell proliferation in the glands and ducts may cause a complete obstruction of the latter, thus giving rise to ulcerations by pressure of the mucous membrane. In perichondritis we find the perichondrium loosened from the cartilage by a more or less deep layer of pus, which, loosening, deprives the cartilage of its nourishment so that it becomes necrosed. This, however, does but seldom happen in the epiglottis, on account of the thinness of the organ, which favors a pointing

of the abscess and evacuation of the pus. In syphilitic ulceration we find a gradual destruction of the tissues from without inward, by a process of disintegration into pus, which first attacks the glands, next the connective tissue, and finally the cartilage itself. The same process takes place in phthisis, with a slight modification, which consists in a copious infiltration of cellular elements into the submucous connective tissue before the ulcerative process begins. This infiltration is often found to such an extent that it gives rise to tumefaction of the organ almost as great as is found in simple œdematous infiltration; and it has a tendency to form depôts of granular corpuscles whose centres very early undergo cheesy degeneration. Very rarely are true tubercles found in the epiglottis.

The tumors found to spring from the epiglottis are mostly adenomata or glandular tumors, which originate here in the same manner as elsewhere, papillomata, fibromata, cystic tumors, and very rarely myxomata. Epithelioma usually does not originate in the epiglottis, and the same is true of carcinoma,—in fact, primary carcinoma of the larynx is extremely rare.

The Ary-epiglottic Folds.

We now come to the consideration of the structure of the upper margin of the laryngeal cavity in the ary-epiglottic folds, which extend from the summits of the arytenoid cartilages to the lateral margins of the epiglottis. In order to obtain a comprehensive view of the relation of parts to each other, it is necessary to make a section across the whole larynx, including the upper margin of the thyroid cartilage and œsophagus (Fig. 3). No great difficulty will be experienced in making such a section according to the plan described in No. 1 of the ARCHIVES, if the larynx comes from a young subject; but the posterior part of the wings of the thyroid cartilage will often be found to have ossified, even in this high position, if the subject is at all advanced in years. This deposit of earthy salts in the cartilage occurs usually in small areas, and is, therefore, not easily detected

by the exploring needle, so that the knife, in making the section, comes upon it unawares.

The cartilage is of the hyaline type, and is nourished by loops of blood-vessels, which dip into it from the thick perichondrium, to which are attached, on the outer side, the

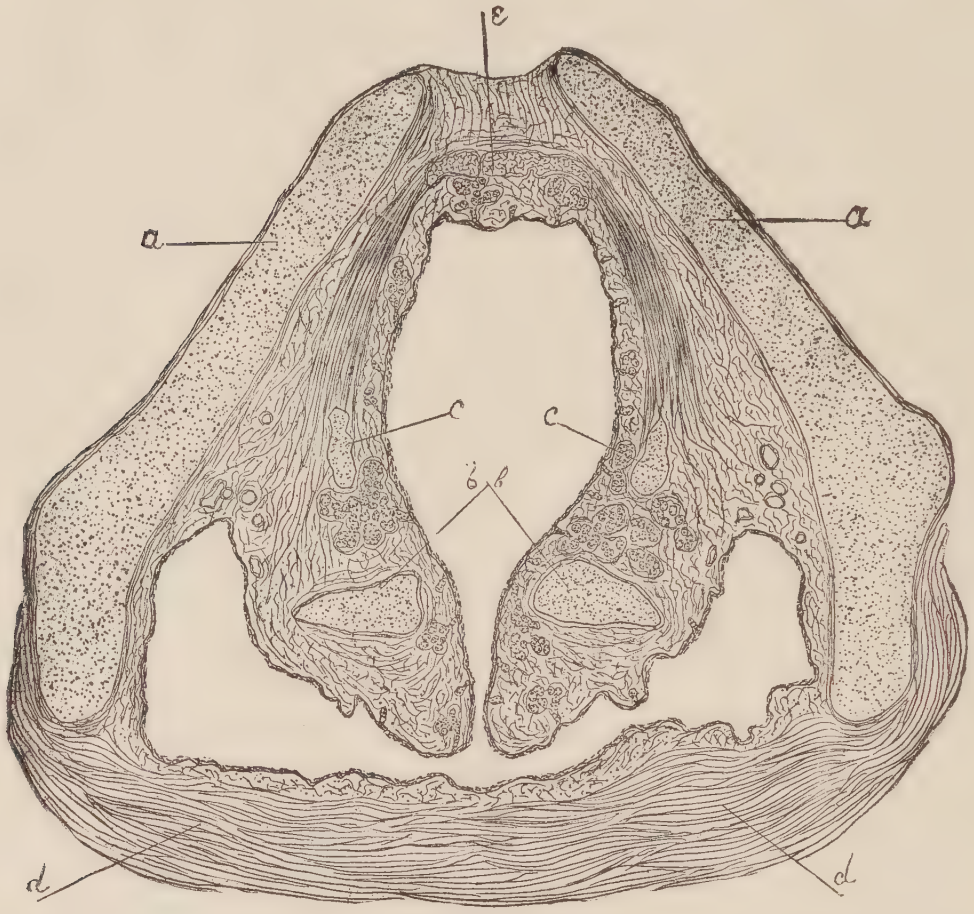


FIG. 3.—TRANSVERSE SECTION OF LARYNX THROUGH ARY-EPIGLOTTIC FOLDS. *aa.* thyroid cartilage; *bb.* capitula Santorini; *cc.* cartilages of Wrisberg; *dd.* œsophagus; *e.* base of epiglottis.

muscles, and, on the inner side, the submucous connective tissue. The section shows the two wings of the cartilage to be separated from each other at the anterior angle by the tissue composing the base of the epiglottis, because the cut has been made through the notch in the anterior part of the upper margin of the cartilage.

The folds themselves which are seen to be separated from each other, particularly by the inter-arytenoid space, merge anteriorly into the epiglottis, having a large open space between them, which in its outline resembles the shape of a bottle or flask.

They are mainly composed of a band of fibrous tissue whose fibres run in parallel bundles from the perichondrium of the epiglottis until they reach the position of the cartilaginous nodules of Wrisberg, where the fibres separate, running in different directions and forming a net-work in whose meshes we find fat cells and a large number of racemous glands. Along with the fibres of this band we find a considerable amount of striped muscular fibres, which are part of the M. thyro-ary-epiglotticus. This tissue is but loosely attached to the perichondrium of the inner side of the thyroid cartilage, so that great mobility of the folds is possible.

The glands are very numerous, especially around the capitulum Santorini; and are of two kinds, viz., racemous and follicular. They consist, as everywhere in the larynx, of a structureless basement membrane lined with epithelial cells, which, in the racemous glands, is of the ordinary glandular type, but in the excretory ducts and in the follicular glands, is of the columnar type. These ducts are remarkable for their size, being much larger in diameter than is usual in the mucous membranes of other parts.

The mucous membrane presents the same characteristics as were noticed in the epiglottis, but presents to the epithelium many projections which, in some animals, amount to vascular papillæ, such as are seen in the tongue.

The epithelium covering the mucous membrane being continuous with that of the upper portion of the laryngeal face of the epiglottis, is of the pavement type at the upper margin of the folds, but gradually changes to the columnar and ciliated form as it descends toward the ventricular bands. The mucous membrane being but loosely attached to the subjacent parts is, with its epithelial covering, thrown into numerous folds, which constantly change in the living subject according to the movement of the parts below. At the posterior part, the mucous membrane continues around the point formed by the capitulum Santorini and the tissue overlying the arytenoid cartilages, and covers the external surfaces of the folds, until the inner aspect of the thyroid cartilage is reached, when it follows its outline and becomes

continuous with the mucous membrane of the œsophagus.

In the corner formed by the posterior part of the wings of the thyroid cartilage and the ary-epiglottic folds we find most of the larger branches of the blood-vessels which, as they run mostly vertical, are shown in the figure in cross section. From here they send numerous smaller branches laterally into the tissue of the ary-epiglottic folds, which soon break up into a capillary network. The œsophagus in this position consists of non-striped muscular tissue, which is attached on either side to the posterior margin of the thyroid cartilages, and sends some fibres to be inserted in the perichondrium of the outer surfaces of the wings of that cartilage. Its mucous membrane is loosely attached by reticulated and mucous connective tissue to the muscular tissue, and is thrown into numerous folds, thus allowing of considerable extension during the passage of food.

The pathological changes observed in the ary-epiglottic folds are principally those of serous infiltration into the submucous connective tissue, of syphilitic ulceration, which presents the same characteristics as were described taking place in the epiglottis, and those of phthisis. These last are somewhat peculiar, and consist of a multiplication of the glandular elements around the arytenoid cartilage and its capitulum Santorini, as well as in a small-celled infiltration into the submucous tissue, constituting what is known to laryngoscopists as the " pyriform swelling " of the arytenoid cartilages. This will be considered more in detail when we come to examine into the anatomy of the ventricular bands and arytenoid cartilages.

The tumors met with in this locality are adenomatous growths, springing from the numerous glands, myxomatous polypi, cystic tumors, papillomata and epithelioma.

THE CONTINUED AND COMPLETE HISTORY OF CASE OF EXTIRPATION OF THE LARYNX, REPORTED BY DR. LANGE IN THE ARCHIVES OF LARYNGOLOGY, VOL. I, NO. 1.

BY W. C. GLASGOW, M.D.,

ST. LOUIS.

IN the first number of the ARCHIVES OF LARYNGOLOGY, a case of extirpation of the larynx was reported by Dr. Lange, of New York.

The patient was under my professional care, both previous to and after the operation.*

The interest which attaches to the history of these cases, the necessity which demands a thoroughly accurate report of each case, both prior to and after the operation, induce me to ask the privilege of reporting the complete history of this patient, noting some vital points untouched in the previous report, and giving the final result of the operation.

Mr. Anheuser, æt. 74, consulted me, October, 1878, for a trouble of the throat that was causing him considerable annoyance. He complained of continual irritation in the larynx, provoking a frequent desire to swallow, and causing repeated spells of coughing. His voice was husky, with a loss of power and tone. There was no dyspnœa even on exertion, and deglutition was perfect. He stated that these symptoms had already existed some six months.

A laryngoscopic examination showed congestion of the glottic and inter-arytenoidal regions; the right base of the epiglottis was pushed upward; the right vocal cord was completely covered and hidden from view; the left was visible

* The history of this case, previous to the operation, was read before *The Medico-Chirurgical Society* of St. Louis, February 9, 1880.

as far as the posterior middle third, and moved on phonation; the place of the right false cord was occupied by a reddish swelling.

The appearance in the laryngoscopic mirror suggested the existence of a sub-mucous tumor, under the right false cord and the right base of the epiglottis.

The diagnosis was made, "a tumor springing from the right ventricle, pushing upward and dislocating the epiglottis."

There was no decision as to the nature of the tumor; the symptoms and history, as well as the great hardness and firmness, spoke against abscess. I hesitated at first between an enchondroma, attached to the right wing of the thyroid, and a fibrous tumor of some character, springing from the ventricle.

I advised an expectant treatment, until, through an increase of the growth, some of the vital functions should be impaired. I suggested tracheotomy as a future possibility, and extirpation of the larynx as a last resort. Dr. H. H. Mudd of this city, an expert laryngoscopist, coincided with me in this view.

This opinion did not please the patient, who demanded immediate and instant relief.

Early in November he visited Chicago, and placed himself under the care of Dr. Monneheimer, who undertook to remove the growth with the galvano-cautery. About Christmas a certain amount of dyspnœa was noticed, which became so great in February that the air passages were opened by Dr. H. A. Johnson. The operation proved very difficult, and his physicians state that it was impossible to use a rigid canula for any length of time on account of the pain and irritation caused by it. A piece of soft rubber tubing about an inch and a half in length, attached to a plate, was used as a substitute.

May, 1879, I was called to Chicago for consultation, and to bring the patient to St. Louis. He was very weak and much emaciated, suffering frequent attacks of suffocation, caused by obstruction of the canula by the profuse muco-purulent secretions. This also caused a constant harassing

cough. He experienced difficulty in swallowing solid food, which I was told became first apparent after the operation; liquids and semi-solid food were taken without difficulty.

A laryngoscopic examination showed great changes in the appearance of the larynx; the tumor had greatly increased in volume, a mass covered by mucous membrane seeming to fill the greater part of the larynx. The epiglottis was twisted, and an oblique irregular line to the left of the tumor alone showed the position of the rima glottidis; the posterior wall of the larynx was pushed backward, extending, as far as could be seen, into the œsophagus; the whole of this part seemed to be involved in the tumor; externally a bulging of the right wing of the thyroid was apparent.

On examining the tracheal wound it was found that the soft rubber tube did not enter the air passage; the interior end of the canal was largely obstructed by a reddish-looking mass, which seemed to spring from above, and projecting downward in two folds left a triangular-shaped opening at the floor about the size of a small quill. One of the inner folds had a constant motion on respiration.

The first and urgent aim seemed to be to establish an unobstructed opening into the air passage. This was accomplished by the galvano-cautery, chromic acid, and the snare. The question of enlarging the opening and also of making a lower tracheotomy was considered, but on consultation with Dr. Jno. T. Hodgen of this city, this was not deemed necessary or advisable.

The patient could not bear an ordinary curved canula, so straight silver tubes reaching into the internal opening were used. Later, the greater part of the obstructions having been destroyed, an almost right-angular canula as large as the canal would admit, was worn with great comfort by the patient. Owing to the abrupt curve, only a single tube could be employed, and this necessitated the removal of the tube for cleansing. This was accomplished generally with but little trouble, the patient often removing and replacing it himself.

The autumn months found him in a most comfortable

state; his physical and mental condition had greatly and steadily improved; his breathing was free, and he was able to walk about his garden, and spent his evenings in his drawing-room playing cards and enjoying the society of his friends. In the month of September he visited the theatre and other places of amusement. He complained of nothing except the difficulty of taking solid food; liquids and semi-solids, such as chopped oysters, were taken with great ease: the food or liquid did not enter the larynx, for this was completely occluded, and he could not take a single inspiration when the canula was closed.

A curious feature in the case was, at times he coughed up a portion of his food through the canula, even such articles as spinach and German noodles. I believe that there existed a fissure between the trachea and œsophagus, although no mention is made of it in the report of the operation. That these articles did not enter through the larynx is clearly proven by the times and character of the cough, which was not quick and spasmodic at the moment of swallowing, but came later, almost after the act. During the summer he coughed up through the tube many crusts, which could only have formed on an ulcerating surface. After a consultation with Dr. Hodgen it was decided that nothing further should be done until the tube should become obstructed by the growth of the tumor downward, or deglutition should become impracticable; under the latter circumstances, after the failure of the stomach tube, extirpation of the larynx should be performed as a last resort.

The difficulties and disadvantages under which the operation would have to be performed, were fully considered and appreciated. The nature of the tumor, a mixed round and spindle-celled sarcoma, as shown by microscopical examination of a piece taken from the wound; the extent of the tumor, involving, as we thought, the trachea and œsophagus as well as the larynx; the advanced age of the patient, promising a diminished vitality and a lack of recuperation and repair,—all combined seemed to forbid such an operation until it was imperatively demanded by his condition.

I believed that the favorable condition of the patient would continue for a length of time, especially if he was kept free from exposure. A careful study of the growth through many months convinced me that the tendency was toward an upward and outward extension, and I had hopes that the pressure of the canula would tend to retard its encroachments on the canal.

Unfortunately the patient learned the future possibilities of his case, and from that time was a changed man. He demanded an immediate operation; for some reason the idea of being fed by a stomach tube seemed intolerable to him; he rejected it utterly. From this time he began to make complaints of not being able to swallow his food, although he drank champagne and seltzer with perfect ease. If the statements of his family are to be believed, he ate when *alone* with slight difficulty, but when any one was present watching him, this seemed to be greatly increased. It was noticed that this difficulty in swallowing varied greatly from day to day. An explanation of this sudden change may be found in the mental condition of the patient. He was a man of strong will, who would brook no contradiction; he was determined on an operation to which his friends were adverse, and which his physicians would not perform until imperatively demanded by his condition; his horror of the stomach tube caused a mental condition, in which he exaggerated the actual difficulty of swallowing.

When he learned the decision of his St. Louis physicians, he determined to go to New York.

I saw Mr. Anheuser again in the early part of February, soon after his return to St. Louis; he was able to pass the days in an easy chair, and appeared very comfortable; the large opening in his throat was covered by a sponge held in position by a band. When the Kingsley plate was in position he was able to swallow liquid food with ease. About ten days later I was called to see him again; he had been having trouble with the plate; it could not be kept in position, and during the act of swallowing it was constantly pushed out, discharging the contents of the pharynx over his chest, and in several instances into the large opening of

trachea, when the canula had been displaced by a cough. I found, on examining, what seemed to be the cause of the trouble: there had been a slight sinking of the œsophagus and trachea; there was also a prolapse of the mucous membrane of the anterior portion of the œsophagus; with the rising of the œsophagus during the act of deglutition the prolapsed mucous membrane was projected forward; as the plate rested on this part of the membrane, it was necessarily pushed upward and outward, and hence displaced. There was also a certain retraction of the lateral walls, at the middle and top of the wound, which produced leakage even when the plates were forcibly held in position by the hand. I had a new plate made, somewhat broader at the upper extremity and one and a quarter inches longer. For a few days this seemed to answer, then the same difficulty again became apparent; it was impossible to keep the plate in position, as it was pushed out in almost every act of swallowing.

A gradual and constant change took place in the parts, the œsophagus and trachea sank deeper, and the lateral walls and edges of the opening became more and more retracted. This continued to the day of his death, when the œsophagus and trachea were one and a half inches below the level of the sternum, and the edges of the opening corresponded with the sterno-cleido-mastoid muscles. The lumen of the pharynx lost its normal shape and assumed that of a flattened oval.

After the failure of the plate, he was fed with the stomach tube to within two weeks of his death. At this time he persistently refused to allow it to be used, and he would take nothing except through the mouth. Lying on his back in bed, he would take a small mouthful of fluid; this, flowing down the posterior wall of the pharynx, collected in the depression formed by the sinking of the œsophagus and trachea; then, by successive acts of swallowing, it passed into the œsophageal tube. During this time he took almost entirely wine and water, expressing great repugnance to food.

The artificial larynx was used but once; this was to ex-

press a single word, the name of his grandchild. After this he refused to use it, claiming that it produced too much distress.

His physical and mental condition during the first two weeks of his return was good, and he was able to sit in his reclining chair during the day. From that time he took to his bed, which he never afterward left. He grew gradually weaker, and fell into a state of complete apathy, seeming to care for nothing and refusing to see his dearest friends. His condition during the last six weeks was so terrible that I was even requested by one of his friends to do something to hasten his end.

Some ten days before his death, my attention was drawn by his daughter to a small tumor springing from the anterior wall of the œsophagus; this gradually increased, until at the time of his death it had attained the size of a small hazel nut. I believe this to have been a regrowth of the tumor.

He died of asthenia May 2, 1880, six months and twenty-four days after the operation.

THE ELECTRIC LARYNGOSCOPE.

By A. WELLINGTON ADAMS, M.D.,

COLORADO SPRINGS, COLORADO.

HAVING presented this remarkable little instrument to the medical profession, I shall offer here, in a succinct manner, a detailed account of its construction, so that any intelligent instrument maker, or skilled electrician, can make one; leaving the reader to refer to the *New York Medical Gazette* of May 22, 1880, or to the September number of my own journal (*Rocky Mountain Medical Review*), for an exposition of the disadvantages and imperfections of the *old* method, and the superior advantages of the *new* one.

I think, however, that to all skilled laryngoscopists its great value will be patent with this simple description.

There are two features about the "electric laryngoscope" giving it its excellency and, therefore, demanding immediate attention. These are: *First*, the application of what is the nearest approach to sun-light—the electric light—in such a way as to bring it under perfect subjection, that it may be easily manipulated; and *second*, the establishment of a permanent relationship between the source of light for illumination and the throat mirror.

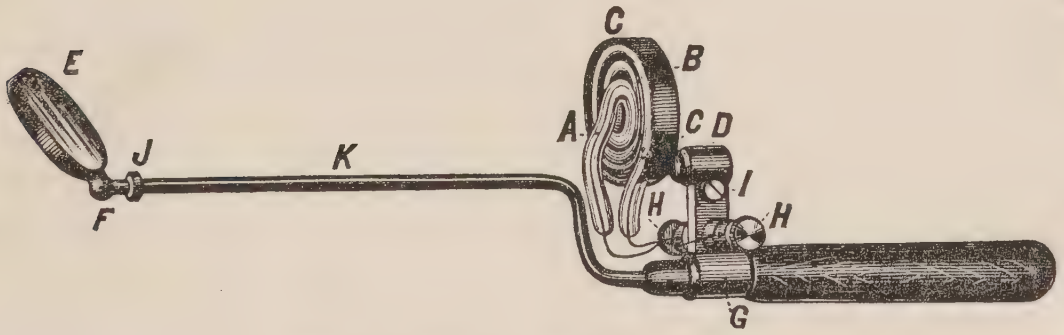
These are accomplished after the manner about to be described: Mounted upon a hard rubber handle, in any way most convenient to the maker, is a brass arm, slit down the centre, and having a socket drilled in its free extremity; the latter for the reception of a brass ball which projects from the periphery of a circular brass cap or case, thus creating a ball-and-socket joint between the arm and cap just referred

to. The aforesaid cap or case is for the reception of a glass carbonic acid vacuum tube, bent in the form of a spiral, and having a platinum wire hermetically sealed within it.

This tube is a slight departure from M. Sassiott's modification of Geissler's tubes. The tube is held in place by means of three delicate catches projecting inwardly from the sides of its case. In the back of this case, and behind the vacuum tube, is a plain concave mirror with a focal distance equal to the space between it and the position of the throat mirror, upon which it is intended to reflect the rays of light emitted by the spiral vacuum tube.

Over the base of the brass arm before referred to, are placed, one on either side, two small binding posts. These posts are in electrical communication with the platinum wires projecting from the extremities of the spiral vacuum tube.

Attached to one end of the aforesaid handle, is a shank, made of some light metal, and bent in such a way as to bring the throat mirror attached to its free extremity upon



ADAMS' ELECTRIC LARYNGOSCOPE [⅔].

(IN RHINOSCOPIC POSITION.)

A, Spiral vacuum tube; *B*, brass case for vacuum tube and concave reflector; *C*, *C*, catches for retaining reflector in place; *D*, ball-and-socket joint for illuminator; *E*, throat mirror; *F*, ball-and-socket joint for mirror; *G*, clasp, by means of which the light can be revolved around the handle of the mirror; *H*, *H*, binding posts for the wire from battery or induction coil; *I*, Brass arm, supporting the illuminating apparatus; *J*, sliding ring, to control ball-and-socket joint, *F*; *K*, shank of throat mirror.

a level with the spiral vacuum tube. The throat mirror just spoken of is attached to the distal end of the shank by means of a very delicate ball-and-socket joint, thus enabling an adjustment at any angle or position, the extremity of the shank forming the axis around which the mirror revolves.

A more lucid idea of the instrument as a whole, and of its various parts, may be had by reference to the illustration, where *I*, represents the brass arm projecting upward from the small end of the handle; *A*, the spiral vacuum tube, whence the light is emitted; *B*, the brass cap serving as a receptacle or case for the vacuum tube and concave mirror; *C*, *C*, the little catches for retaining the two latter in place, and which are formed by simply bending in small segments of the case here and there; *D*, the ball-and-socket joint for furnishing universal motion to the light; *I*, the screw for regulating the mobility of said joint; *H*, one of the binding posts for receiving the wires from the battery or induction coil;* *K*, is the shank which supports the throat mirror, *E*, by means of the delicate ball-and-socket joint at *F;* and *J*, represents a sliding ring regulating the mobility of this joint.

By this combination and arrangement, almost any desired relationship between the source of light and the throat mirror may be attained in the "twinkling of an eye," so to speak, and thus *retained* until the examination in any individual case shall have been completed. It must be borne in mind, that the entire arm supporting the light may be revolved upon the handle at *G*, so that when it is necessary in any particular case to place the shank of the instrument in the angle of the mouth, in order to secure a proper view, the beam of light will not be intercepted by the root of the tongue.

When the flexible wires (wound with silk, similar to those used in connection with the telephone) leading from a Ruhmkorff coil giving an inch spark, are connected with the binding posts, H, H, a *brilliant white light* is emitted from the glass spiral. *This light has neither heat nor gas, and is of such concentration and intensity as to so illuminate the respiratory tract, down to a point nearly an inch below the "bifurcation," that every detail in the larynx and trachea, down to that point, is sharply defined and brought out in bold*

* It will be remembered I have said there were two of these posts, one on either side, and that they were in electrical communication with the wires projecting from the two extremities of the spiral vacuum tube; in this figure the binding post of the opposite side is only partially in sight.

relief in the throat mirror; and if the latter be large and slightly concaved, any particular detail requiring special structural examination may thus be greatly magnified.

The induction coil for this light may be worked with only three cells of the Grenet battery, and both appliances may be placed any desired distance from the laryngoscope. For operating the instrument, I prefer, however, an equivalent number of the Léclanché cells, as this form of battery requires no special attention or renewal from one month to several years—according to use. Again, with the Léclanché battery, in order to stop action it is only necessary to break the continuity of the circuit, whereas with the other forms, the zincs must be removed.

What this little instrument accomplishes in rhinoscopy is truly marvelous. Heretofore the idea of procuring an image of the actual cavity of the nares has been more theoretical than practical. Not that the principles upon which the method is founded are erroneous, or the task much more difficult of accomplishment than in laryngoscopy, but simply because the light was too crudely adjusted and of insufficient intensity to illuminate the much *smaller* and *tortuous* passages of the nares.

In any subject where the anatomy or condition of the parts will at all admit of an examination, the electric laryngoscope will procure a brilliant and sharply defined rhinoscopic image that would surprise and brighten the face of the most accomplished operator.

All who have seen it declare it to be the greatest medical instrument ever yet invented; this, because of the magnitude of its accomplishments combined with its great *simplicity* and *novelty*.

This is really the only *veritable* "laryngoscope" ever yet produced.

Heretofore we have had only a *method* for examining the larynx and nares, not an *instrument* that we could pick up and say: "This is a laryngoscope, or this is a rhinoscope!" It is light, easily manipulated, is not liable to get out of order, and, taking it all in all, costs much less in the end than the Tobold paraphernalia.

Since using it in my own practice, I marvel at my ability to accomplish anything at all under the old method.

I have also applied the principle to otoscopy, resulting in the production of an otoscope without equal.

Both of these instruments were exhibited at the recent convention of the Colorado State Medical Society, where they met with an enthusiastic reception.

A description of the otoscope will appear in print, for the first time, in the September issue of the *Colorado State Medical Journal, Rocky Mountain Medical Review*, and in the printed "Transactions" of the Society likewise.

Measurements for constructing my instrument may be taken from the figure, which is ⅔ full size.

CLINICAL NOTES.

A CASE OF GLOSSO-PHARYNGEAL ABSCESS, TERMINATING FATALLY.

By MORRIS STROUD FRENCH, M.D.,

PHILADELPHIA.

It is some years since the case came under my observation, and the note is made entirely from memory.

A married lady of about forty-five years of age was actively engaged in conversation while eating her supper, when she suddenly complained of a choking sensation, which was soon followed by a sense of suffocation.

The lady was perfectly aware that the alarming symptoms were produced by the presence of a piece of chicken bone, which had probably become fixed in the pharynx.

After trying in vain to displace the foreign body by swallowing pieces of bread, and passing the finger far back into the throat, and the symptoms becoming more alarming, two physicians were sent for, and arrived soon after. They could feel the foreign body with the point of the finger, but all efforts failed to disengage it, and finally they endeavored to push it down into the stomach by means of a probang, but this also failed.

When I saw the patient the following morning with the attending surgeon, she was bathed in a profuse clammy perspiration, and suffering agony. Pulse was rapid and somewhat full.

The larynx was evidently in an acute state of inflammation, the neck being much swollen and œdematous, ecchymosed spots being present at various points.

The patient was immediately placed under the influence of chloroform, preparatory to performing œsophagotomy, and an incision was made through the skin and platysma between the

sterno-mastoid muscle and trachea. Just at this stage of the operation, the patient suddenly expired, after a severe spasm of the glottis, death evidently being due to asphyxia, produced by inflammatory swelling. The operation was continued, and a large glosso-pharyngeal abscess was encountered containing a quantity of most offensive pus.

The foreign body, an irregular piece of chicken bone, was found lying behind, and partly imbedded within, the abscess.

In cases of this kind, death is an imminent eventuality at all periods of the disease, and the sudden termination was by no means unexpected. As it has been some time since the case occurred, I am unable to give minute particulars.

CASE OF CYSTIC ADENOMA OF BASE OF TONGUE; WITH RETRO-PHARYNGEAL AND CERVICAL ADENOMA.

By J. SOLIS-COHEN, M. D.,

PHILADELPHIA.

* * * A married woman, 40 years of age, applied in February, 1880, to the Laryngoscopic Department of Jefferson Medical College Hospital, for relief from an impediment to speech and deglutition.

Impairment of deglutition was reported as of fifteen years' date, and impairment of articulation as of thirteen and a half years' duration. There had been occasional attacks of what was diagnosed as laryngitis; generally in the spring and in the fall.

My attention was called to the patient with word that a tumor of the epiglottis existed, which I was requested to remove; and that there was an abcess of the pharynx on which my opinion was solicited.

On laryngoscopic examination of the very well nourished and docile patient, I discovered an elongated globose tumor the size of a small grape, attached to the posterior portion of the root of the left side of the tongue, and lying in front of the epiglottis; while a post-pharyngeal projection pressed close upon it from the junction of the posterior and lateral walls of the same side of the throat.

To seize this growth with a pair of ordinary dressing forceps and sever its connection from the tongue, was but the work of a moment; and in a minute the impediment to articulation was overcome. The bleeding was insignificant and soon ceased spontaneously, by which time it was evident that normal deglutition had become practicable. The laryngoscope now revealed a healthy larynx, with the left vocal band in the cadaveric position, indicative of complete paralysis of the recurrent laryngeal nerve of

Cystic adenoma of root of tongue; with retro-pharyngeal adenoma to the side.

that side. Examination externally revealed a cervical tumor extending three inches from just below the left ear, in an oblique direction closely corresponding with that of the anterior edge of the sterno-cleido-mastoid muscle, and in its broadest portion two inches and one tenth in diameter. The pulsation of the carotid artery was very perceptible on palpation of this growth. Internally the tumor projected into the pharynx to the bulk of a large almond; and upon palpation there, the pulsation was still more perceptible. The patient reported that the external tumor was of five years' growth, and had been preceded by a disagreeable feeling in the ear as though some muscle of the neck had been strained. Audition in this left ear was normal, while hearing was completely abolished in the right ear.

Surgical interference with the cervico-pharyngeal growth was declined on my part as too hazardous; an opinion in which I was confirmed by the judgment of my colleague, Dr. S. W. Gross, of the surgical staff of the hospital.

Dr. Seiler examined the growth, removed and pronounced it a cystic adenoma.

At last date (August, 1880), the external tumor is slowly enlarging; and paralysis of the left side of the tongue, with atrophy, has become superadded to the paralysis of the left vocal band.

OXIDE OF ZINC IN LARYNGEAL PHTHISIS.

By SAMUEL JOHNSTON, M. D.,

BALTIMORE.

In the treatment of the stage of ulceration in laryngeal phthisis, I have found,—after using a spray of a solution of ℞. sodæ chlorat., gr. v—x ; acidi carbolici, gr .i—ij ; glycerini, ♏x ; aquae destill fl ℥ i ; eau de cologne, ♏x,—a small quantity of the following powder, applied with an insufflator once or twice in the twenty-four hours, far superior in its effects to the well-known combination with tannin : ℞. Iodoformi, ℈iij ; zinci oxidi, ℈ij ; morphiæ sulph., gr. iij. M.

A CASE OF CHRONIC LARYNGITIS CAUSED BY A FOREIGN BODY IN THE BASE OF THE TONGUE.

By CARL SEILER, M. D.,

PHILADELPHIA.

John B., æt. 28, applied at the Dispensary for Throat Diseases of the University of Pennsylvania, complaining of soreness in the throat, cough, slight hoarseness, difficult and painful deglutition, and white, starch-like expectoration ; and stated that his trouble was of several weeks' standing, and was growing worse. On laryngoscopic examination the usual appearances of chronic laryngitis were seen, but, in addition, a thin, glistening, needle-like body was noticed to be protruding about half an inch from the body of the tongue, near the glosso-epiglottic fold. The patient, on being questioned, could not remember having swallowed a needle, or other foreign body, and stated that his trouble had commenced as a slight cold, growing gradually worse. The body was easily removed with a pair of curved forceps, and proved to be a bristle from a tooth brush, somewhat swelled by its long maceration. After removal, the symptoms of laryngitis soon disappeared, and the patient reported as well a few days after.

REVIEWS AND BOOK NOTICES.

A Manual of Diseases of the Throat and Nose, including the pharynx, larynx, trachea, œsophagus, nasal cavities, and neck. By MORELL MACKENZIE, M.D., London, Senior Physician to the Hospital for Diseases of the Throat and Chest, Lecturer on Diseases of the Throat at the London Hospital Medical College, and Corresponding Member of the Imperial Royal Society of Physicians of Vienna. Vol. I. Diseases of the pharynx, larynx, and trachea. London, J. & A. Churchill, New Burlington Street, 1880. 8vo, pp. 601.*

Die Krankheiten des Halses und der Nase, VON MORELL MACKENZIE, M.D. London, etc. Deutsch unter Mitwirkung des Verfassers herausgegeben, und mit zahlreichen Zusätzen versehen von Dr. Felix Semon, Practischem Arzt, Mitglied des Konigl. Collegiums der Aerzte zu London, Physician am Hospital for Diseases of the Throat and Chest. Mit 112 Holzschnitten. Berlin, 1880. Verlag von August Hischwald. 8vo, pp. 804.

"Mackenzie's Book is Out." For the great majority, perhaps for all, of the readers of the ARCHIVES, an announcement in these four words is all-sufficient. Dr. Mackenzie is admittedly the best laryngologist of England, and his work on Throat Diseases, long expected, will be read, not only by every specialist, but also by every especialist and general practioner who is likely to see a copy of the ARCHIVES.

As is shown by our heading, a German translation—in relation to which Dr. Semon deserves great credit, both for faithful and elegant rendering, and discriminating additions—has been published simultaneously with the English edition, and we hope that a French translation is being prepared.

* A critical notice of this work will appear in a future issue.

The book before us consists of three sections : I, the pharynx ; II, the larynx ; III, the trachea ; and an appendix. The sections are very full, and the appendix embraces special formulæ for topical remedies.

Three further sections, embracing respectively the œsophagus, nasal cavities, and neck, which will complete the work, are advertised to be already in the press.

The author is all day, and often at night-time, busily occupied with attending to patients, and it is really a matter of surprise to one who knows of his constant professional engagements, that he has been able, even with assistants, to prepare the magnificent record of his practice which is embodied in this volume. Even as a literary feat it is worthy of praise. It contains an excellent account of what is known on each subject discussed, with a large number of foot-note references to the writings of others ; but what gives it its preëminent value, is the clear, concise, and conscientious statements of the results of his own large experience.

The writer of this notice could mention some points on which he differs from the author, but they are almost all only individual minor differences,—mainly differences of opinion and of habit in manipulation,—in relation to which others engaged in the practice of our specialty might agree with either, or perhaps with neither, and the worst of which are but as sun spots that do not darken the flood of light which Dr. Mackenzie has shed upon the subject.

[L. E.]

Naso-pharyngeal Catarrh. By Martin F. Coomes, M.D., Professor of Physiology, Ophthalmology and Otology in the Kentucky School of Medicine, etc. Louisville, 1880, 165 pp., small octavo.

The preface of this little book states that the author reluctantly undertook to write a practical treatise on naso-pharyngeal catarrh for the use of general practitioners of medicine, at the request of numerous friends. This means, we suppose, that the general practitioner should be put in possession of such special methods as have proved serviceable, but which have not yet been made generally known. This, we are sorry to say, we think the author has failed to do, for he has omitted any consideration of those surgical measures which alone have proved so indubitably efficacious in the hands of modern specialists.

Opinion in regard to the effect of different local medicaments is still very varied among specialists in this field, and the chief

value of Prof. Coomes' book is in the record of his experience in regard to them. He very properly urges the use of the atomizer above all other means for local application of medicaments, especially with the aid of compressed air, and gives an illustration of a force-pump and receiver devised by him in 1878, which are identical with those long used by specialists, especially in New York. He makes no mention of one of the principal causes of chronicity in naso-pharyngeal catarrh, viz., hypertrophy of the adenoid tissue at the vault of the pharynx, nor of its treatment. The destruction or removal of this tissue, and the removal of the loose, hypertrophied mucous membrane of the turbinated bones, we consider the most important advances in the treatment of this disease. In Prof. Coomes' book there is a record of the removal, in one case, by scissors, of loose membrane from the turbinated bones, but there are no general recommendations in regard to this method of treatment; neither is there mention of any of the uses of galvano-cautery, which has proved of such great value in this class of cases.

We think, that the recommendations, in examination of the pharynx, to depress the tongue with the finger, which has been "well wrapped with a napkin or handkerchief," instead of using a tongue depressor, and not to depress the tongue at all in rhinoscopy, but to "allow it to remain quiet in its natural position," require condemnation.

In conclusion, we are forced to say that, as a treatise on naso-pharyngeal catarrh, the book is quite incomplete, and a pamphlet on local medication in this disease would have given the author's friends and the public the benefit of his views and experience in a much less number of pages. [F. I. K.]

Tracheotomy in Laryngeal Diphtheria (Membranous Croup), with especial reference to after-treatment. To which are added a few general remarks on diphtheria, and its earlier treatment. By Robert William Parker, Assistant Surgeon to the East London Hospital for Children, etc. London, David Bogue, 1880, pp. 82, small octavo.

This little book is in reality an enlarged edition of a paper published in the last volume of the *Transactions of the Royal Medical and Chirurgical Society*, details having been added which were not exactly adapted for reading before a learned society.

The author considers "croup" and "diphtheria" as etiologically identical, and, therefore, the terms "membranous croup,"

"diphtheritic croup," and "laryngeal diphtheria," are to him synonymous.

The details of the operation are carefully given, and much stress is laid upon proper after-treatment, and minute directions are given in regard to it.

In performing tracheotomy, the author says he is inclined to believe that it is always advantageous to cut the cricoid, apparently not considering that there is any danger of subsequent necrosis, or impairment of the voice.

We must differ from the author, when, in speaking of the removal of obstruction in the trachea (after the operation), he says, "as a rule, aspiration (by the mouth) may be undertaken without any fear," and think that some such instrument as the one devised by Mr. Parker should be used instead of the mouth.

Instead of the quarter-circle tube in common use, Mr. Parker proposes an angular one, as corresponding more nearly with the direction of the trachea, in order to avoid ulceration from pressure on the anterior wall.

The author has great confidence in the utility of keeping the patient in a croup bed, *i. e.*, a bed with a canopy, so that he can be subjected, not only to a moist air, but also, if desirable, to steam impregnated with disinfectants. Of the drugs which have a solvent action on membranous exudations, Mr. Parker prefers the soda solution (10–20 grs., ℥ i). Lime, though more active in dissolving membrane in a test tube, is so quickly altered by the carbonic acid in the expired air, that it becomes inert in the trachea.

In Chapter V the complications, extra-tracheal, intra-tracheal, as well as the difficulties in final removal of the tube, are discussed.

In the concluding summary the author states his belief that the local condition in diphtheria precedes the general; that the disease spreads by the contagion of its own products; and that this must be combated by the complete destruction and removal of the products of the local lesion.

The paper was well worth reproducing in the present form.

[F. I. K.]

Sullo Scorticamento delle Corde Vocali, per il Cav. CARLO LABUS, Docente di Laringoscopia della Regia Universita de Pavia, Dirigente il Dispensario per la mallattie della gola all'Ospedale Maggiore di Milano; Socio Corrispondente della American Laryngological Association. Milano, 1880. 8vo, pp. 24.

Flaying of the Vocal Cords. By Dr. Carlo Labus, Lecturer on Laryngoscopy in the Royal University of Pavia, Director of the Dispensary for Diseases of the Throat in the General Hospital of Milan, Corresponding Fellow of the American Laryngological Association.

This very interesting monograph has for its object the introduction of a novel operation for the more rapid and permanent cure of chronic congestion of the vocal cords. It consists in flaying the cords, separating from them the hyperplastic layer of mucous membrane, by means of an instrument such as Tuerck's polyp-crusher. Perfect tolerance of the instrument in the larynx having been obtained, the operation is performed during inspiration; the cords being then separated, the hyperplastic mucous tissue presents itself so that it can easily be seized. If the inflammatory process extends over more tissue than the instrument can embrace, it becomes necessary to strip the whole affected extent. The operation is said to give but little pain. For the moment the voice becomes clearer, but very soon it becomes weaker and weaker, until complete aphonia exists, which lasts two or three days. This is caused by paralysis of the superior internal thyro-arytenoid muscle. The consecutive reaction is but very slight; the cords present slight redness and turgescence, the flayed space remaining perfectly white. As a general thing, the lesion becomes cicatrized in three or four days, and nothing remains but a slight turgescence which gradually disappears. The voice returns with all its delicacy and purity.

The consecutive treatment can be said to be negative. Pain, a slight burning sensation, lasting a few hours, requires but little attention. Abstinence from irritating drink, smoking, and breathing vitiated atmosphere, or from exposure to causes giving rise to coryza or bronchial catarrh, is necessary; but above all, silence must be observed the first few days, in order to give the organ complete rest. Local medication, producing irritation, retards recovery. If, however, the reduction of the turgescence should be too slow, *then only* very weak astringent inhalations may be advised. The material condition of the cord operated upon does not allow the least exercise at singing for at least one month after the cure of the lesion, to secure complete absorption of the exudation and coaptation of tissues. Local anæsthesia, by means of Tuerck and Schrœtter's method, can be used preparatory to the operation, but is not advised, the chloroform interfering with the process of repair.

The author gives the details of twelve cases, several of them prominent Italian singers, on whom he performed the operation successfully. He ends his summary by stating that flaying of the vocal cords is innocuous and furnishes more complete and lasting results than any other treatment, requires shorter time to effect its object, and constitutes the true radical treatment of hyperplastic inflammation of the mucous membrane of the vocal cords.

Chronic congestion of the vocal cords, notwithstanding its slight pathological importance, is a source of great trouble to persons gaining a livelihood by means of the voice, and the very small proportion of cures obtained by medication is well known to laryngologists. Dr. Labus, residing in a notably musical centre, has arrived at the same conclusion, and gives a comparative list in which the number of cures amounts to about one in ten of cases treated. His operation, enhanced by successful results in cases of long standing, seems a decided advance in laryngoscopic surgery, and the author's reputation is a sufficient guarantee to bespeak for it a favorable consideration. [C. E. S.]

MISCELLANY.

Death of Dr. FRANK H. DAVIS.

We regret to chronicle the demise, August 22d, of

Dr. Frank H. Davis of Chicago,

a young man of great promise and of considerable literary attainment. He was the originator of The American Laryngological Association, and was its first Vice-president. His bereaved father, Prof. N. R. Davis, was the founder of The American Medical Association.

MORE REPORTS ON LARYNGOLOGY.

The increasing interest in matters laryngological and thereto appertaining, has received additional evidence, since our last issue, in the establishment of a half-yearly *Report on Rhinology, Pharyngology and Laryngology*, by Kendal Franks, M.D., in *The Dublin Journal of Medical Science*, the first report having appeared in the issue for August, 1880.

American Laryngological Association.—The minutes of the last annual meeting of this Association are unavoidably postponed to the next issue.

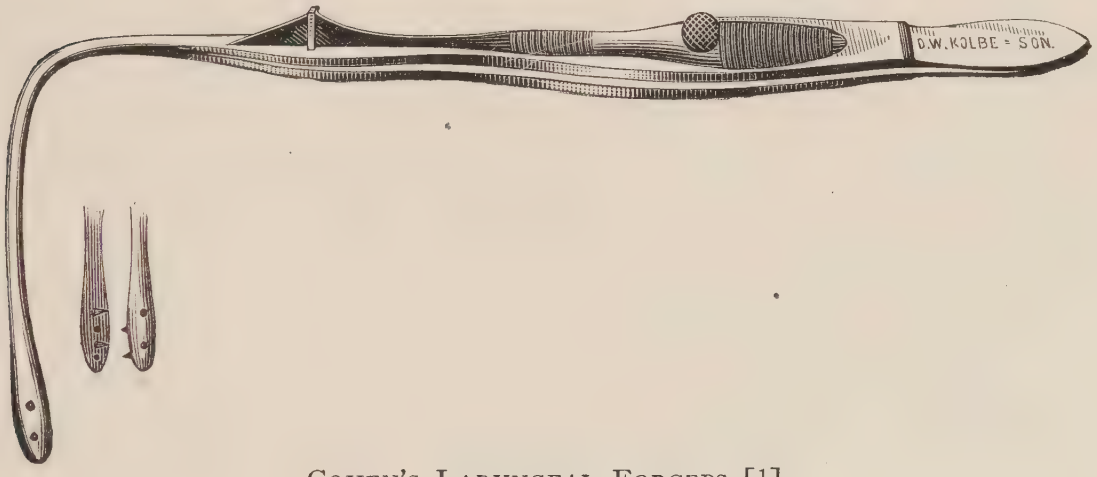
NEW INSTRUMENTS.

AN IMPROVED LARYNGEAL FORCEPS.

By J. SOLIS-COHEN, M.D.,

PHILADELPHIA.

For more than a year I have used with great satisfaction some laryngeal forceps made for me by D. W. Kolbe's Son, of Philadelphia, on the plan shown in the accompanying illustration.



Cohen's Laryngeal Forceps [½].

The sponge or cotton wad, used in local applications, is firmly secured by means of a slot in one of the branches, firmly locked by means of a long wedge-shaped bolt upon the other branch. This instrument is free from the objections to spring-catches, which are apt to become insecure after repeated usage; and bids fair to realize the idea of a perfectly safe and reliable sponge-holder. The shape of the instrument can be varied to meet any special indication; and one smaller than that depicted answers for a post-nasal sponge-holder.

QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.,

AND

D. BRYSON DELAVAN, M.D.

LARYNX.

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2. Ariza. Cases of laryngeal polypi extirpated by the sponge method of Voltolini, combined with evulsion. *Revista de Med. y Chir. Pract.* Madrid, May, 1880.

3. Arnold. Paralysis of the left vocal cord. Case. *Maryland Med. Jour.*, Sept. 1, 1880.

4. Bauer. Laryngo-tracheotomy for laryngeal tumor. Case. *St. Louis Clin. Record*, March, 1880.

5. Boisson. A study of the laryngeal complications in pulmonary phthisis. *Thése de Paris.* No. 280. 1880.

6. Borngaupt. On cancer and other diseases of the larynx. *Voyenno Med. Jour.*, St. Petersburg, 1880. cxxxvii, pt. 3, p. 29.

7. Chiari. On laryngitis crouposa. *Monatsch. für Ohrenheilk.*, July, 1880.

8. Chuquet. A case of ulcerative disease of the larynx, probably of tuberculous nature. *Ann. des Mal. de l'Oreille et du Larynx*, vi 1880.

9. Coupland. Diphtheritic laryngitis. Tracheotomy. Recovery. Case. *Lancet*, June 19, 1880.

10. Delavan. Two cases of aneurism of aorta, with paralysis of left recurrent laryngeal nerve. *N. Y. Med. Record.* Path. Soc. Reports, July 24, 1880.

11. Eröss. On syphilitic disease of the larynx in children. *Jahrbuch für Kinderheilk.*, n. f. xv, p. 139. 1880.

12. Franks. Report on rhinoscopy, pharyngoscopy and laryngology. *Dublin Jour. Med. Sci.*, Aug., 1880.

13. FRENCH. A case of double epiglottis and double voice. *Annals of the Anat. and Surg. Soc. of Brooklyn, N. Y.*, July, 1880.

14. GRINDA. Laryngitis in tubercular meningitis. *Génio Med. Quir*, Madrid, 1880. xxvi, 173.

15. HALL. Syphilitic disease of larynx ; dyspnœa, dysphagia. Recovery. Remarks. *Lancet*, June 12, 1880.

16. HASLUND. Polypus of larynx, Case. *Hosp. tid. Kjobenh.*, 1880. 2 R. vii, 321.

17. HEINZE. On laryngeal tuberculosis. Leipzig, 1879. Abst. *Wiener Med. Presse*, May 30, 1880.

18. IBABEL. On laryngeal scrofulides. *Thése de Paris*, March, 1880.

19. INGALS. Treatment of diseases of the larynx. *Boston Med. and Surg. Jour.*, August, 17, 1880.

20. JACOBSON. On laryngeal examination. *Voyenno Med.*, St. Petersburg, 1880. cxxxvii. pt. 3, 1–28.

21. JOHNSTON. Acute laryngitis caused by inhalation of coal dust. *Maryland Med. Jour.*, Balt., 1880. vi, 158–160.

22. JOHNSTON. Papillomatous growth on the right vocal cord. *Ibid.*, 156.

23. JOHNSTON. Tertiary syphilitic sore throat with stenosis of larynx. *Maryland Med. Journal*, 1880. vi, 157.

24. JURASZ. On phonetic cramp of the glottis. *Deut. Arch. für Klin. Med.*, June 15, 1880.

25. KOCH. Laryngeal stenosis following typhoid fever : considerations on laryngo-typhus. *Ann. des Mal. de l'Oreille et du Larynx*, June, 1880.

26. LE DENTU. Epithelioma of the larynx, with secondary involvement of the ganglia of the neck. *Le Progres Med.*, No. 29, 1880.

27. LEDESZKY. A case of spasm of the glottis. *Wein. Med. Presse*, July 4, 1880.

28. LEREBOULLET. Acute retro-laryngeal abscess, œdema of the glottis, and dysphagia. Tracheotomy. Death. *Abeille Med.*, Paris, 1880, xxxvii, 81.

29. MATLAKOWSKI. On chorditis vocalis inferior hypertrophica. *Medycyna Narszawa*, 1880, viii, 161, 177, 193.

30. MERKLEN. Acute retro-laryngeal abscess ; œdema of the glottis, and dysphagia. Tracheotomy. Death. *Courier Med.* Paris, 1880, xxx, 89.

31. MICHAUX. Œdema of the ary-epiglottic folds in a case of laryngeal diphtheria. *Bull. Soc. Anat. de Paris*, 1879. 4 s., iv, 140.

32. MOURE. Papillary tumors of the larynx in an infant æt. 5, the symptoms simulating a tracheo-bronchial adenopathy. *Ann. des Mal. de l'Oreille et du Larynx*, June 1880.

33. MOURE. A new laryngoscope. *Progres Med.*, 1880, viii, 259.

34. MOURE. A contribution to the study of laryngeal syphilis. *La France Med.*, July 3, 1880.

35. MONVEROUX. A case of compression of the recurrent laryngeal nerves. Tracheotomy. Paris, 1880, 42, 4°.

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40. Porter. Larynx of Redemeier. (Case of hanging.) *St. Louis Med. and Surg. Journal*, June 5, 1880, 588.

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43. Roler. Death from simple laryngitis. *Chicago Med. Gazette*, 1880. iii, 136.

44. Schmit. Necrotic laryngitis with perforation of the thyroid cartilage. *Progres Med.* Paris, 1880, viii, 186.

45. Schmidt. Laryngeal tuberculosis, and its treatment, from practical observations. *Deut. Arch. für Klin. Med.*, Aug. 3, 1880.

46. Smith and Walsham. A case of extreme laryngeal stenosis from syphilis. *London Medical Times and Gazette*, i, 1880, 464.

47. Sokolowski. On laryngeal phthisis. *La Med. de Varsoire*, vol. vii, 1879. *Gaz. Med. de Paris*, June 26, 1880.

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49. Szeparowicz. On the mechanical treatment of stricture of the larynx. Abstract. *Centralblatt für Chirurgie*, June 26, 1880.

50. Voltolini. A rare case of disturbance in the coördination of the laryngeal muscles (chorea laryngis). *Monatssch. für Ohrenheilk.*, July, 1880.

51. Weber. Bilateral paralysis of the glottis openers. Case. *Philadelphia Medical Times*, June 19, 1880.

52. Weiss. Observations on the use of massage in catarrhal and croupous laryngitis. *Arch für Kinderheilk.*, Band i, 5 u. 6 heft, 1880. *Monatssch. für Ohrenheilk.*, June, 1880.

53. Zaverthal. On syphilitic affections of the larynx. *Arch. Gen. de Med.* Paris, June, 1880.

2. **Extirpation of laryngeal polypi.** Ariza's attention was directed by his friend, Dr. La Sota, of Seville, to the subject of the extirpation of laryngeal polypi after the method of Voltolini. This method seemed unsatisfactory, and

from experiments made by Dr. Ariza, in a case published in *Anfiteatro*, May 31, 1878, he found that the action of the sponges upon the polypus amounts to nothing as long as it does not bleed; but when blood is once drawn, either by the friction of the sponges, by the pincette, by the ecraseur, or by other means, the complete destruction of the neoplasm by the sponge is obtained in a few days. The author presents two cases upon which he operated successfully, and concludes his long article by repeating his opinion that the method of Voltolini for the extraction of laryngeal polypi, is of great value, because it enables us, without running any risk, to perform an operation which in many cases cannot be treated successfully by other methods, and by which, with the aid of other instruments, the best results may be obtained.

11. **Hereditary syphilis of the larynx in children.** Eröss contends that diseases of the larynx in children, due to hereditary syphilis, deserve careful attention on account of their variety and of their prognosis. The literature of the subject is too limited to allow of intelligent discussion. The present statistics have been given by Gerhardt (*Deutsch Arch. f. Klin. Med.*, ii, 1867). He cites the following case: The patient, aged 3½ years, came of parents who positively denied syphilis. At the end of her third year an eruption appeared upon her body, which lasted about six weeks and left behind it a copper-colored scar. This was followed by an attack of psoriasis. When first seen, her respiratory movements were comparatively limited, but symmetrical. Respiration was difficult and called for strong muscular action. It was audible at some distance, and rasping in character. Auscultation over the back indicated weakened respiratory murmurs with some rhonchi. She often had attacks of dyspnœa, preceded by frequent spasmodic paroxysms of coughing, and attended by marked cyanosis. Percussion was normal. Deglutition was difficult. Appetite poor. There was complete aphonia. Laryngoscopic examination showed that the epiglottis was very much shortened. It was thickened and rolled upon itself. The mucous membrane was pale. The ary-epiglottic folds were thickened, of a pale red, and but little transparent. The left false cord was more than double the thickness of the right. Both true vocal cords were reddish yellow. The mucous membrane of the trachea could not be seen. Tracheotomy seemed necessary, but inunctions of mercury speedily relieved the condition. At the end of four months the enlargement of the cervical glands was less. The epiglottis was little larger than normal. The laryngeal mucous membrane was only slightly swollen, the left vocal cord but little thicker than the right, and the voice entirely normal. Deglutition was unobstructed. Respiration likewise, and also noiseless. Nothing abnormal was found in the lungs.

13. **Double epiglottis.** Dr. French's case is unique. The man, aged 30, was a singer and contortionist at variety shows. He complained of weakness of the voice; that he could not always grasp the desired note. He could command with ease the chest and falsetto register, and in singing had a baritone and falsetto voice. Neither gave him discomfort, and in ordinary conversation he had no preference as to which to use. In his family he used the high voice entirely, but in business preferred the low. He employed either according to habit or association, and asserted that many of his friends were not aware that he had two voices. He gained the extra voice at the age of sixteen. In singing he always used the high voice, as with it a greater compass could be commanded. With

it he had a range from A to F in the falsetto register. The compass of the low voice was too small to allow him to reach the high notes of an ordinary song. He might be said to command the lower range in the chest register, and could run the scale from A to A. The throat externally was very prominent on account of an angular curvature of the dorsal spine. The cricoid was large, and had a deep V-shaped notch in its upper border. Above the base of the tongue the mouth and throat were normal. There was a marked double arrangement of the glandular tissue at the base of the tongue. The epiglottis was double, the right half of the cartilage overlapping the left to a slight extent. The division in the mucous membrane extended down to the median glosso-epiglottic fold, but the division in the cartilage must extend farther, as during the production of the falsetto voice the lateral halves moved inward, as if hinged in the middle. As to whether the double epiglottis has anything to do with the ability to command the two voices the author cannot say, but he thinks that probably it has, for when the sides of the epiglottis are drawn in during the formation of notes in the falsetto register, the calibre of the laryngeal cavity is decreased to a considerable extent, and thereby the production of the falsetto voice is made easier.

15. **Syphilis of larynx.** *Apropos* of a case, Dr. Hall remarks that although the symptoms were so urgent that tracheotomy seemed necessary, the patient experienced immediate relief upon being placed in the recumbent position, which diminished the number and extent of the respiratory movements as much as possible. Treatment by nutritive enema was also of great service in keeping the larynx at rest.

17. **Tubercular laryngitis.** Heinze believes that tubercular laryngitis only occurs subsequently to the development of the tubercular manifestations. He considers the cause of the lesions as due to the degeneration of tubercle; whereas Schnitzler finds the cause of the disease to be a chronic inflammation of the mucous membrane, and the ulcerations due to follicular tumefaction.

27. **Spasm of glottis.** Ledeszky's patient, aged five, had had a slight cough four or five days, which suddenly assumed an extraordinary form. She was a feeble, poorly-developed child. Dulness over right lung. Nothing abnormal observed on auscultation, and no change in the larynx. The attacks supposed to be coughing were, on examination, proved to be spasm of the larynx. They were attended with marked dyspnœa and a crowing sound. At first the attacks were short, but later lasted for as much as three minutes, and the intervals between them became shorter. The attacks were caused by almost any ordinary movement of the chest, as in speaking or laughing. Swallowing food was impossible. Opium was administered, but the condition continued thirteen days. When it left, the patient developed a marked trembling of the limbs, with loss of power of the legs. There was also mild delirium of such a nature, that it seemed as if the influence which caused the laryngeal attacks, was now transferred to the brain and cord. Under the administration of electricity she was cured in three months.

34. **Syphilitic laryngitis.** Moure's thesis on syphilitic laryngitis is a continuation of his previous article upon the diagnosis of syphilitic and tubercular laryngitis. He classes under the head of secondary lesions, erythema, mucous patches, paralysis. Tertiary lesions are ulceration and necrosis. The

erythema of the secondary period will only, in exceptional instances, pass the limits of redness, while at a later period of the syphilitic infection erythema will only be the commencement of a more serious lesion. The secondary lesion leaves no cicatrix.

37. **Chronic congestion of the upper air passages due to Bright's disease.** Dr. Owens believes that chronic Bright's disease is an occasional cause of congestion of the upper air passages, and that although chronic degenerative change in the parenchyma of the kidney does not always cause diseases of the mucous membrane of the air passages, yet it acts as an exciting cause when there is a constitutional tendency to congestion of the mucous membrane, and increases the severity of the disease when already present. He suggests the exhibition of saline diuretics, iron, cod liver oil, etc., and advises injections of hot water into the posterior nares. He advises also gargles and frequent applications of mild astringents.

41. **Oedematous laryngitis in Bright's disease.** Potain's patient presented all the symptoms of œdema glottidis. Laryngoscopic examination showed that the œdema was most pronounced in the false vocal cords, although the whole larynx was inflamed. Albumen was found in the urine. The question arises whether this latter condition was caused by the dyspnœa. As is well known, an œdema of this kind is only an infiltration of the submucous tissue by a tissue of exudation, and not by pure serum. It is probable that both the laryngitis and the nephritis were due to a common cause, namely, taking cold.

47. **Tubercular laryngitis.** Sokolowski defines tubercular laryngitis, which he considers a necessary complication of pulmonary phthisis, and then reviews the symptoms and prodromata of the disease. He divides tubercular laryngitis into *serious* and *less serious* cases. In serious cases the course of the disease is rapid, the lesions are pronounced, especially in the posterior wall of the larynx, whence they extend to the neighboring regions, and the patient is sure to die. Hoarseness, cough, vomiting, dyspnœa, and dysphagia, and frequently marked pain of the larynx and ear, are certain indications of the serious form, which the author describes minutely. He insists upon the necessity of repeated laryngoscopic examinations, not only in patients suffering from tubercular laryngitis, but in general in all patients affected by pulmonary phthisis. In the less serious form, which usually accompanies acquired pulmonary phthisis, the course of the disease is slow. The disease remains stationary for a long time, and the ulcers sometimes cicatrize. The patients complain of dryness of the pharynx and of the necessity for expectoration, but they do not complain of pain. An energetic treatment of tubercular laryngitis is not advocated. Change of climate in winter is advised.

48. **The sponge operation for laryngeal polypi.** Strauss warmly praises Voltolini's method of operating upon laryngeal polypi by means of a sponge probang, and refers the origin of the operation to the time of Hippocrates. All polypi, from the entrance of the larynx to the upper part of the trachea, may be removed by this means. The author describes the operation and a method of employing it without the laryngoscope. He does not go as far as Voltolini, who urged on the laity as well as physicians to perform it. Among the fifteen cases which are referred to, there is a remarkable one of fibroma, by Ponfick.

49. **Treatment of stricture of the larynx,** Although Szeparowicz prefers Schrötter's method of dilatation of the larynx, he modifies it by fastening the zinc bougies with a thread, instead of with the pincette of Schrötter. The silk thread is bound fast to the tracheal tube, and is less inconvenient to the patient than the pincette, against which militates the fact that it may be removed by the patient himself. Reaction is apt to follow dilatation, especially when an attempt is made to shorten the treatment by a too rapid progression of the sizes. Slow and patient progress is to be practised. Eighteen cases are reported in which this method was employed.

50. **Chorea laryngis.** Voltolini's patient, a girl of 12 years, suffered incessantly from a peculiar barking cough, which disappeared in the spring. During her last attack, the cough ceased suddenly, and although the impulse to cough was strong, the act was impossible, as her larynx closed, and the patient seemed to choke, becoming cyanotic. Four leeches were applied to the neck, and gray ointment was rubbed in. These relieved the dyspnœa, but it was still impossible for her to cough. Arsenic, quinine, and bromide of potassium were given for some time without effect. The larynx itself was normal, and articulation unaffected. The effect of coughing, however, was to produce a feeling of strangulation about the throat, with cyanosis. With the laryngoscopic mirror in the pharynx, not only were the movements of the vocal cords, etc., perfect, but the act of coughing was accomplished without the slightest difficulty or inconvenience ; but, as soon as the mirror was removed, the inability to cough returned. Bromide of potassium was administered, and on alternate days the constant and interrupted electric currents were applied to the neck externally, but with no signs of improvement. Application of two electrodes externally, one on each side of the neck, together with one electrode internally in the larynx, was followed by improvement after about a fortnight. The child coughed repeatedly during sleep but not by day. By degrees the power of coughing returned during the early part of the day, and was lost again in the afternoon. Gradually she became able to cough during the whole of the day, the cough at first having the before-mentioned barking character. Finally, the cough became entirely normal and disappeared, the application of electricity being continued throughout. It is remarkable that the series of symptoms disappeared in the inverse order in which they began.

51. **Bilateral paralysis of the abductor muscles.** Weber's patient was suffering from pulmonary phthisis and laryngitis. He was attacked with dyspnœa, which increased rapidly and became so urgent that he could not lie down. Laryngoscopic examination revealed paralysis of the abductor muscles of the larynx. Tracheotomy was at first refused by the patient, but at the end of five days his condition became so serious, that he submitted to the operation. Relief of the dyspnœa was immediate, but at the end of four weeks the paralysis seemed to have involved the arytenoidei muscles, besides the crico-arytenoidei postici.

52. **Massage in laryngitis.** Weiss reports two cases in which remarkably good results were gained by massage of the exterior region of the larynx. This is performed by encircling the neck with both hands, while the thumbs make a downward rubbing motion.

53. **Syphilis of the larynx.** According to Zaverthal, this affection is found in 60 per cent. of all cases of laryngeal disease. The lesions are those of secondary syphilis (erythema syphilitica and mucous patches) ; also those of tertiary syphilis (erythema papulatum, erythema nodosum) ; gummata, very frequent upon the epiglottis or the ary-epiglottic folds, etc. ; inflammations of the cartilages and perichondrium, chondritis and perichondritis ; the narrowing of the larynx following the cicatrizations of ulcerations ; the retraction of cicatrized parts ; vegetations, or anchylosis of the articulations, which were formerly the seat of syphilitic changes. The possibility of the existence of mucous patches upon the mucous membrane of the larynx is no longer a disputed point. Secondary syphilitic changes of the larynx yield to local treatment by means of insufflations of the bichloride of mercury. General treatment aids materially in the successful progress of the case. Local treatment is often sufficient. Tertiary alterations require active general, as well as efficient local treatment. But in cases of chondritis or perichondritis, local treatment must be replaced by inunctions of the preparations of mercury. Vegetations and anchylosis resulting from the cure of syphilitic processes in the larynx, seldom yield to the action of the most complex treatment, always excepting the knife and, in cases of vegetations, the galvano-cautery. When there is serious stenosis, the least increase of collateral œdema or in the thickness of the adjacent parts of the glottic opening may lead directly and rapidly to asphyxia. This rarely happens in cases of phthisis, for the process of ulceration which always goes on is sufficient to maintain, in most cases, a sufficient width of the rima glottidis. Other forms of laryngeal stenosis frequently end in asphyxia. When this occurs, catheterization of the larynx with the vulcanized rubber tubes of Schrötter may momentarily save life, but it would be a mistake to trust to this practice for lasting effects on the progress of the disease. There is only one case in which catheterization may be sufficient to definitely remove the danger of suffocation, namely, in case of an acute complicating œdema. In all other complications tracheotomy is required.

The three results to be hoped for from tracheotomy, are :

1. Relief from imminent suffocation.
2. Amelioration of existing pathological conditions by rest of the parts.
3. Most energetic local treatment of the larynx can be carried on without danger.

PHARYNX, SOFT PALATE, AND TONSILS.

1. Bourdon. On scrofulous ulcerations of the pharynx and of the tongue. *Gaz. des Hôpitaux*, June 5, 12, 1880.

2. Damaschein. Primary *muguet* of the pharynx. *Gaz. des Hôpitaux*, July 29, 1880.

3. Ferrell. Cynanche tonsillaris. *St. Louis Med. and Surg. Journ.*, Aug., 1880.

4. Herzog. On herpes of the pharynx. *Pest. Med. Chir. Presse.* Budapest, 1880, xvi, 357.

5. Kohts. The diseases of the pharynx. *Handbuch der Kinderkrankheiten.* (Gerhardt.) Tübingen, 1879, iv, 2 abth, 129, 164.

6. Laboulbene. Pharyngeal tuberculosis ending in lupus. *Medical Press and Circular.* London, June 9, 1880.

7. Luc. Erysipelas affecting successively the pharynx, throat, breast, face, and lungs. *La France Med.*, March 31, 1880. *N. Y. Med. Record*, July 3, 1880.

8. Martineau. The syphilitic affections and ulcerations of the mucous membrane of the throat; their diagnosis and treatment. *Tribune Med.*, xiii, 64, 105.

9. Penrose. Chronic hypertrophy of the tonsils. Treatment. *N. Y. Med. Record*, July 10, 1880.

10. Schmidt. On pharyngitis lateralis (*sic*). *Deut. Arch. für Klin. Med.*, Aug. 3, 1880.

11. Stackler. Erysipelas of the pharynx, mouth, etc. Case. *Jour. de Med. de Brux.*, June, 1880.

12. Tarenetski A. Syphilis of the soft parts of the palate and pharynx. *Voyenno Med. Jour.* St. Petersburg, 1880, cxxxvii, 2.

4. **Angina herpetica.** This disease is only distinguished from herpes of the skin by its seat on the isthmus of the fauces, tonsils, palatine arch, and uvula. It generally appears unilaterally in the spring and autumn, with general symptoms of febrile movement and often also of gastritis. On the second or third day of the disease small blisters appear on the mucous membrane, which is swollen and reddened; these blisters break open and are easily removed, and superficial ulcerations appear. The submaxillary glands and the lateral glands of the neck are little swollen, if at all. Fever, etc., soon subsides. Duration usually ten days. Local paralyses are said to succeed angina herpetica in some cases. Herzog is of opinion that angina herpetica may, in like manner with herpes Zoster, be occasioned by conditions of excitation in the trigeminal region.

10. **Pharyngitis lateralis.** Schmidt calls attention to the importance of that form of localized granular pharyngitis, which he calls pharyngitis lateralis. Störk is the only author who mentions the affection, and he remarks that this modification of follicular pharyngitis is often very troublesome, owing to the hyperæsthesia which it produces. Luschka and Zaufal both agree that the lateral region of the pharynx may be the seat of pathological alterations. The extent of the difficulty is no criterion of the annoyance it may cause. The only radical treatment is destruction of the follicles by the galvano-cautery. If that be not at hand, the application of other caustics will answer the purpose.

NARES AND UPPER PHARYNX.

1. Barry. The surgical treatment of epistaxis. *Brit. Med. Journ.*, No. 1013, 1880.

2. Coomes. Naso-pharyngeal catarrh. Louisville—Bradley and Gilbert—1880.

3. Cruveillier. On extirpation of a naso-pharyngeal polypus by the palatine method. *Bulletins et Memoirs*, Paris, April 5, 1880.

4. Delavan. On some points in the anatomy of the nasal fossæ. *N. Y. Med. Jour.*, Oct., 1880.

5. Duplay and Barthélemy. Two cases of naso-pharyngeal polypi, treated by interstitial injections of chloride of zinc. *Arch. Gen. de Med.*, 1880, cxlv, 353.

6. Frédet. On serious epistaxis : practical questions. *Union Med.*, 1880, 3, s, xxix, 467.

7. Goodwillie. The surgical treatment of naso-pharyngeal catarrh. *N. Y. Med. Gazette*, July 31, 1880.

8. Hebra. Rhino-scleroma. *Aerztl. Ber. der K. K. Allg. Krankenh. Wien.*, 1878, 1879.

9. Henderson. On influenza ; its symptoms, varieties and causes. *Glasgow Med. Journal*, August, 1880.

10. Justi. Tents in the treatment of diseases of the nares and the naso-pharyngeal space. *Wiener Med. Wochensch.*, July 17, 1880.

11. Marino. Naso-pharyngeal polypus. Case. *Genio Med. Giorno*, Madrid, 1880, xxvi, 204.

12. Reisenfeld. On the treatment of chronic pharyngeal catarrh. *Ann. des Mal. de l'Oreille et du Larynx*, June, 1880.

13. Rodrigues. Coryza and syphilitic ozœna. *Rev. Esp. de Oftal., Sif., etc.*, Madrid, i, 1880, 350.

14. Roth. Removal of a tumor from the naso-pharyngeal space. Case. *Wiener Med. Wochensch.*, July 24, 1880.

15. Sarazin. On certain tumors of the buccal cavity and of the nasal fossæ. *Rev. Med. de l'Est.*, 1880, xii, 139, 180.

16. Tackenberg. Case of stenosis of the right nasal fossa. *Jour. de Med. de Bruxelles*, May, 1880.

17. Thurston. The surgical treatment of epistaxis. *Brit. Med. Journal*, June 5, 1880.

18. Serité. On mucous concretions in the posterior nasal fossæ. *Bull. et Mem. Soc. Chir. de Paris*, June 5, 1880, 315.

19. Woakes. Cotton wool as a vehicle for medicating the nasal region. *Lancet*, June 5, 1880.

1. **Epistaxis.** Mr. Barry states that in his experience a pledget of lint saturated in turpentine and pressed against the probable location of the hemorrhage has always resulted in immediate cure.

3. **Extirpation ol naso-pharyngeal polypus by the palatine method.** Cruveillier's patient, a young man aged twenty-three, suffered for over two years with obstruction of, and frequent hemorrhage from, the right nostril. On examination a tumor was found which occluded the right nostri and filled the posterior part of the nasal fossa, where it could be felt by introducing the finger behind the soft palate. The palatine arch appeared convex. There was no deformity of the face nor protrusion of the right eye, but there was some slight epiphora. The palate was divided in the middle line, and the polypus, thus exposed, was then seized by the forceps and extracted. Hemorrhage was excessive. The polypus was very large and was bi-lobed. One

lobe was attached to the pterygoid plate of the sphenoid, and the other to the basilar process of the occipital bone, which was so eroded that it was feared the tumor had penetrated into the interior of the skull. Recovery was effected within six weeks. The gap in the palate, which extended as far forward as the anterior palatine foramen, was closed a year afterward by Fergusson's method. The abundance of the mucous secretion prevented union by first intention, but the granulating surfaces were brought together, and by filling up with the uvula the gap which remained, the palate was finally restored.

10. **Tents in the treatment of nasal diseases.** Justi advocates the use of tents of laminaria or sponge for dilatating and medicating the nasal canal. The size of the tent should be graded to answer the requirements of the special case in hand. The nares should be washed with the douche. Then the tent, oiled as to its point, should be insinuated in the nostril by a gentle movement of rotation until the end reaches the posterior nares. The laminaria tent should remain *in situ* for at least thirty hours, after which a sponge tent should be used.

12. **Treatment of chronic pharyngitis.** Reisenfeld called attention to the treatment of chronic catarrh of the pharynx advocated by Michel, which consists in the galvano-cauterization of the diseased parts. In rare instances cure is spontaneous. The waters of certain mineral springs are useful. Generally recourse is had to local treatment—the application of astringent or caustic solutions. These means are apt to be ineffective. The galvano-cautery, used in accordance with the views of Michel, gives the best results. A two-cell battery of Middeldorp is used. The author always cauterizes the tonsils as well as the pharynx. The number of scarifications is proportioned to the intensity of the catarrh. In severe cases he cauterizes deeply.

14. **Naso-pharyngeal polypus.** Roth removed successfully a naso-pharyngeal polypus the size of a pigeon's egg. The galvano-caustic loop was used, and complete cure in four weeks resulted.

16. **Stenosis of nasal fossa.** Tackenberg reports the case of a man aged twenty-nine, and otherwise healthy, who complained of a complete obstruction of the right nostril. The trouble had existed beyond his recollection. There was, moreover, on the corresponding side of the face, marked hyperidrosis. There was complete anosmia. The nasal fossa of the right side was unusually large, but otherwise normal. It was decided to perforate the passage. Little hemorrhage resulted. Dilatation was practised for eight days, when the patient was cured. The facial diaphoresis had considerably diminished. The author, *àpropos* of this fact, refers to the statistics of Semeleder about the direction of the nasal septum, which is entirely straight in only one patient out of five. He contends that the perspiration on one side of the face was caused by a reflex action proceeding from the nerves of the nasal fossæ. He is in doubt as to the result obtained being lasting, and in case of a relapse, he intends to remove the inferior turbinated bone by Nélaton's process. He insists on the rarity of congenital osseous obliterations.

17. **Epistaxis.** Thurston injects the nostrils with ice-cold water, which generally succeeds. If the hemorrhage persists, he uses a weak injection of perchloride of iron.

19. **Cotton wool in the treatment of nasal disease.** The suggestions in this paper are novel. By a new method the cotton wool is first charged with a definite quantity of the drug to be used—astringent, antiseptic, stimulant or sedative—and the application made as follows. A sufficient quantity of the cotton is twisted spindle-shaped, but loosely, upon a piece of thread or silk ; the thin ends are brought together and tied with a knot. Thus the pledget is doubled upon itself and firmly secured to the thread. A blunt probe is engaged in the cotton and made to conduct it along the floor of the nose to the desired spot. Another pledget is inserted in the other nostril, and the threads hanging from both nostrils are tied together below the septum, by which means the patient will be assured that the cotton will not be swallowed. In the morning the pledgets can be withdrawn by pulling the threads. With care the vault of the pharynx, Rosenmüller's fossa or the orifice of the Eustachian tube may be topically medicated. A number of pledgets may be introduced into one nostril.

TRACHEA.

1. Astier. On the indications for tracheotomy. *Thése de Paris*, No. 251, 1880.

2. Angieras. Tracheotomy in cancer of the larynx. *Thése de Paris*, March, 1880.

3. Bensch. A case of paralytic *ektasia* of the trachea. *Monatssch. für Ohrenheilk.*, June, 1880.

4. Bœckel. On the employment of the thermo-cautery in tracheotomy. *Ann. des Mal. de l'Oreille et du Larynx*, June, 1880.

5. Bernays. Syphilitic ulcer of the trachea opening into arch of aorta. Death. *St. Louis Med. and Sur. Journal*, August, 1880.

6. Drasch. On the physiological regeneration of the ciliated epithelium of the trachea. *Centralblatt für Med. Wissensch.*, August 14, 1880.

7. Eternod. Chronic affections of the tracheo-bronchial ganglia, and their sequelæ. *Arch. Gen. de Med.*, August, 1880,

8. MacEwen. Clinical observations on the introduction of tracheal tubes by the mouth, instead of performing laryngotomy or tracheotomy. *Brit. Med. Journal*, July 31, 1880.

9. Manley. Intra-hyoid bronchotomy. *N. Y. Med. Rec.*, June 19, 1880.

10. Petel. On polypi of the trachea following the closure of a tracheotomy wound, necessitating a new operation. *Thése de Paris*, 1879. *Arch. Gen. de Med.*, August, 1880.

11. Roth. On tracheotomy without the canula. *Memorabilien*, 1880, xxv 145.

12. Tassi. A contribution to the study of laryngo-tracheotomy. *Atti. Acad. Med. de Roma*, 1879, v. 94.

13. Tassi. Three cases of laryngo-tracheotomy. *Ibid*, 81.

14. Terrillon. Suffocative goitre. Tracheotomy. Case. *Bull. et Mem. de la Soc. Chir.* Paris, July 5, 1880,

15. VERNEUIL. Crico-thyrotomy by galvano-cautery. Ulceration and perforation of common carotid artery. Death. *Virginia Med. Monthly*, July. 1880.

4. **The thermo-cautery in tracheotomy.** Bœckel reports twenty-two tracheotomies performed by means of the thermo-cautery, with the following statistics: For croupous laryngitis, 6 operations, 5 cures, 1 death. For diphtheric laryngitis, 15 operations, 7 cures, 8 deaths. For œdema glottidis, 1 operation, 1 death.

He believes the thermo-cautery to be especially effective in division of the isthmus of the thyroid, and is positive that secondary hemorrhage following its use is extremely rare. The separation of the eschars has rarely in his experience been attended with bad results. The author calls particular attention to the fact that in four cases incision of the trachea with the bistoury was followed by copious, persistent and annoying hemorrhage (vide discussion on tracheotomy, Boston Society for Medical Observation.—*Arch. Lar.*, vol. i, 2). In one case the bleeding was so profuse that the child's head had to be held downward over the edge of the table to prevent obstruction of the bronchi. In order to avoid a repetition of this accident, in two cases in which there was great congestion of the neck the trachea was opened by the thermo-cautery, with most excellent results.

7. **Chronic affections of the tracheo-bronchial ganglia.** Eternod gives a short bibliographical study of the subject and refers to the normal anatomy of the tracheo-bronchial ganglia. He then divides the subject into three parts. In the first he gives a detailed anatomical description of twenty-eight original cases, collected in the pathological laboratory of Prof. Zaln, in Geneva. In the second part is given the lesions of the ganglia and of their capsule, as well as the lesions of the neighboring regions. Finally, in the third part, is indicated the result of the author's clinical researches in regard to the nature and origin of melanotic pigment.

8. **Introduction of tracheal tubes by the mouth instead of tracheotomy.** A few facts concerning the method of introducing tracheal tubes into larynx, are worthy of attention. *Post-mortem* experience shows that tubes can, with a little practice, be passed with facility through the mouth into the trachea. This is accomplished by introducing the finger into the mouth, depressing the epiglottis on the tongue, and so guiding the tube over the back of the finger into the larynx. An instrument of large calibre—No 18-20, English—is better, because less liable to catch upon the various irregularities on the internal laryngeal surface. It is also found that to pass an instrument into the air passages through the nose, without the finger in the mouth as a guide, is not so easy. With a small catheter having a stiff, properly-curved stilette, an entrance into the larynx may sometimes be effected, but not often. An instrument, however, can be passed through the nose into the pharynx; then by introducing the finger into the mouth and hooking the catheter forward and toward the median line, it can be guided into the larynx. In this way respiration through the nose might be carried on in the living. This method is much more difficult than passing the instrument through the mouth,

while the nasal tube is necessarily of much smaller calibre. Trendelenburg and Schrötter have proved that instruments can be passed into the trachea without exciting an uncontrollable degree of spasm.

10. **Polypi of the trachea.** Dr. Carié, in his thesis, contends that exuberant granulation may prevent the removal of the canula after tracheotomy. A somewhat different case was observed by Petel. Tracheotomy has been performed upon a child. The wound healed, and, a fortnight or month afterward, attacks of asphyxia supervened, which necessitated a renewal of treatment. According to Millard, Gigon, Perier and Archambault, these attacks of asphyxia are dependent upon the development of intra-tracheal polypoid excrescences. Some hold that these polypi are merely exuberant granulations, and pathological anatomy appears to favor this view. Krishaber and others believe that these productions, originating from the mucous membrane, existed prior to the first operation. At all events, the symptoms determined by these growths (rhonchi, dyspnœa, etc.) usually appear a fortnight or month after the cicatrization of the tracheal wound. They are so serious that death may suddenly ensue in a fit of spasm of the glottis. Intervention should not be delayed, and consists in performing tracheotomy anew upon the cicatrix, and removing the polypus if possible. If the seat of the disease cannot be discovered, a cure need not be despaired of : the polypus may become visible after several months, or it may disappear spontaneously.

FOREIGN BODIES.

1. Carlyle. False teeth in the pharynx ten hours without producing urgent symptoms. *Lancet*, June 28, 1880.

2. Griswold. Chip in the windpipe. Tracheotomy. Recovery. *American Practitioner*, August, 1880.

3. Hamilton. Impaction of foreign body in pharynx of a child. Removal. Recovery. *Lancet*, 1880, i, 718.

4. Jones. Hypodermic needle in bronchus. Expectoration on thirteenth day. *Lancet*, August 7, 1880.

5. Windelschmidt. I.—Foreign body in larynx (piece of meat.) Death. II.—Foreign body in trachea (bean.) Death. *Monatssch. für Ohrenheilk.*, July, 1880.

1. **False teeth in pharynx.** The patient was not aware that she had swallowed her teeth, although they were lost for a number of hours and search was made for them about the house. They were found lodged in the lower part of the pharynx.

2. **Chip in the trachea.** The case of Dr. Griswold's patient is one of unusual interest. A lad of twelve stated that he had swallowed a chip of wood and since had been troubled with a noise on inspiration very like that accompanying asthma. Two days after the occurrence, when seen by the doctor, there was no dysphagia, no cough, no soreness about the throat, and no abnormality in the breathing during sleep. The hereditary asthmatic tendencies of the boy's

family, the relief to the breathing by the administration of small doses of ipecac. and antimony, and the absence of stridor during sleep, made the existence of a foreign body in the trachea or larynx doubtful. However, a laryngoscopic examination was made by Dr. Bacon, who demonstrated the presence of a foreign body bridging the trachea below the vocal cords. Crico-thyrotomy was done, and the body found impacted about opposite the upper ring of the trachea. It was three-fourths of an inch long, a quarter of an inch wide, and one-sixteenth of an inch thick, of hard wood and with square, sharp corners, which held it firmly in place. Recovery was speedy and perfect.

MISCELLANEOUS.

1. Behnke. The mechanism of the human voice. London. *Med. Times and Gaz.*, June 5, 1880.

2. Bergeron. On the voice. *Thèse de Paris*, 1877. *Rev. de Sc. Med.*, i, xvi, 33.

3. Boechat. Iodoform in the treatment of goitre. *Correspondence Blatt für Schweig. Aërtzte.*, Jan. 1, 1880. *The Practitioner*, London, Aug., 1880.

4. Chervin. Frequency and cause of stammering. *Med. Rec.*, June 12, 1880.

5. Fränkel. On the use of the sensitive flame as a diagnostic means in diseases of the vocal apparatus. *Verhandl. der Berlin. Med. Gesellsch.*, 1880. x, 12.

6. Foulis. A new instrument; the Glossotilt. *Edinburgh Med. Journal*, July, 1880.

7. Gee. Diphtheria. Tracheotomy. Recovery. Case. *Lancet*, June 19, 1880.

8. Gill. The identity or non-identity of membranous croup and diphtheria. *St. Louis Med. and Surg. Journal*, July and August, 1880.

9. Martel. Contribution to the study of simulated aphonia. *Ann. des Mal. de l'Oreille et du Larynx*, June, 1880.

10. Poore. The physical examination of the mouth and throat. *London Lancet*, July 17, 1880.

11. Simon. Contribution to the study of inflammations of the thyroid gland. *Thèse de Paris*, March, 1880.

12. Tillaux. Excision of the thyroid. *Lancet*, June 26, 1880.

13. Weir. On the relief of the deformity of a broken nose by some new methods. *N. Y. Med. Rec.*, 1880, xvii, 279–282.

1. **The mechanism of the voice.** Behnke believes that among all the many excellent works on the human voice, not one brings before the reader the whole subject from beginning to end, and for this reason advances his own. It contains a *résumé* of the literature on the subject, together with copious quotations from recognized authorities. The work is one of questionable value, for we should hardly care to accept the doctrine which the author implies; namely, that want of a scientific knowledge of the structure and function of the larynx

is to be credited with the scarcity of good vocalists, and is to be held responsible for the early deterioration of the voices of those who may possess them. "Artists are born, not made," and it is possible that those who rise to the highest rank will owe their position to nature much more than to art.

2. **The changes of the voice at puberty.** Bergeron describes the changes which take place in the anatomy of the larynx at the age of puberty, and suggests that, since at this time, the organ is in a state of congestion which produces hyper-nutrition, any pathological condition existing before puberty is apt to persist after it. Puberty, therefore, although a physiological phenomenon, may complicate a pathological inflammation, and thus produce aphonia or even more serious symptoms. The author explains in detail the various changes in the voice at puberty, discusses their connection with the development of the genital organs, and passes in review the different causes by which the voice is more or less modified; diathesis, climate, manner of life, castration, etc.

3. **Iodoform in goitre.** Dr. Boechat believes that iodoform, dissolved in sufficient quantity in some indifferent fluid, may be successfully used in the treatment of goitre. The complications often met with after injections of iodine, usually due to the formation of cicatrices, are not to be feared from injections into the tumor of iodoform. It may be applied externally as follows: Finely powdered iodoform is first mixed with glycerine and then applied to the tumor; as soon as it begins to dry, it should be painted over with collodion. This application should be repeated every two or three days. The best results have been obtained in young patients and goitres of recent growth, which consisted of soft, non-fibrous swellings. Iodoform administered internally has not given very good results.

4. **On stammering.** Chervin states that in France, stammering occurs in .005 of the whole population, and that by reason of it, 1,000 men annually are exempted from military service. He gives some account of its causes, etc., and urges the importance, in view of the above statistics, of giving more attention to its cure, for which purpose he has established several schools.

9. **Simulated aphonia.** Martel defines this affection as a condition of aphonia, for which no cause can be found in the larynx by laryngoscopic examination. Such cases are continually met with in ordinary practice, when the patient employs the deceit for the sake of exciting sympathy, etc. In military services, malingerers often resort to this device, and it is so easily accomplished that the physician is often completely misled. The author suggests a sharp application of electricity to the vocal cords. The malingerer will be so taken by surprise that the voice almost invariably will be found.

12. **Excision of the thyroid.** Tillaux recently operated successfully for goitre, supposed to be exophthalmic, in a woman aged 29. The thyroid was as large as a fœtal head at term, and it extended from the thyroid cartilage to below the notch of the sternum, and toward the left as far as the trapezius. The patient suffered from violent palpitation of the heart; the pulse was never less than 130 a minute. There was dysphagia, amenorrhœa and marked vaso-motor disturbance, but little prominence of the eyeballs. An oblique incision was made parallel to the anterior border of the sterno-mastoid, and then one horizontal to the first. The capsule was found firmly adherent to the thyroid, and

the attempt to separate it was followed by such copious hemorrhage that the right lobe was abandoned, and a second incision parallel to the first was made on the left side, and a flap thus formed which was raised over the chin. No adhesions were found on this side, and the thyroid body was enucleated without difficulty. The bleeding points were secured. It was noticed that when the trachea was exposed, after the removal of the tumor, there was great difficulty in breathing, but as soon as the flap was replaced and the trachea covered, the dyspnœa at once ceased. Recovery was prompt and without special accident.

NOTE.—Owing to the absence of Dr. Lefferts in Europe during the past three months, the preparation of the above report has been entrusted to Dr. Delavan.

ARCHIVES OF LARYNGOLOGY.

MALFORMATIONS OF THE ŒSOPHAGUS.

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MALFORMATIONS of the œsophagus, in all probability, are of extremely rare occurrence. All the recorded cases which I have been able to collect do not number more than 56, and I am only able to add one from my own observation, making altogether 57 examples. These facts are especially significant when we remember that the presence of the affection, in viable infants at least, is attended by such striking symptoms, that it is hardly possible for it to escape notice, whilst its inevitably fatal result affords an invariable opportunity of investigating its cause. At the same time, it must not be forgotten that Hirschsprung himself personally observed four examples of the condition in less than seven months in a town of only 108,000 inhabitants, and that within three weeks Ilott met with two cases in a country district near London. It is, indeed, possible that if still-born infants, and especially monsters, were more uniformly submitted to careful dissection, malformations of the œsophagus would be found of more frequent occurrence than the small number of recorded cases would lead us to suppose. The earliest recorded examples of deformity of the œsophagus are two cases published by Blasius[1] in 1674; in one of these the tube bifurcated and again united, in the other there was saccular dilatation of the gullet at its lower end. In 1821, Mondière[2]

[1] "Obs. Med. Rarior." Leidæ, 1674, Tab. vi, Fig. 5.

[2] "Exposé des Trav. de la Soc. Roy. de Méd. de Marseille," 1821, p. 44.

described a case in which there was deficiency of a portion of the œsophagus, with intercommunication between the alimentary and respiratory tracts; and in 1825 a similar case was reported by Martin[1]. It was not, however, till 1861 that the literature of the subject was collected. In that year Hirschsprung,[2] in a small work of considerable merit, brought together ten cases of the affection, and further elucidated it by four examples which had come under his own notice. Since then, several more cases have been placed on record, and the following synopsis, I think, represents fairly completely the facts published up to the present date.

Of complete deficiency there are 5 cases on record, viz., those of Sonderland,[3] Lozach,[4] Mellor,[5] Heath[6], and a specimen in the Museum of the Army Medical Department at Netley.[7]

Of blind termination there are 9 examples, viz., those of Roederer,[8] Marrigues,[9] Lallemand,[10] Van Cruyck,[11] Brodie,[12] Durston,[13] Pagenstecher,[14] Warner,[15] Pinard.[16]

Of cases in which there was no intercommunication between the œsophagus and air-passages, with deficiency of a portion of the former, or, as they have been called, "inosculating" cases, there are 37 examples, the communication being with the trachea in 34, and with one of the bronchi in 3. The former category includes the cases of Mondière,[17]

[1] "Observ. des Sciences Médic." Marseille, Juillet, 1825.

[2] "Den Medfodte Tillukning af Spiseroret." Copenhagen, 1861.

[3] "Hufeland's Journal," August, 1820.

[4] "Journ. Univ.," t. iii, p. 187.

[5] "Lond. Med. Gaz.," June 26, 1840, vol. xxvi, p. 542.

[6] Ibid. (Mellor's case is given in detail, but Heath's is only briefly referred to.)

[7] "Catalogue of the Museum Army Med. Dept.," 1845, p. 385.

[8] Meckel: "Handbuch d. Pathol. Anatomie." Leipzig, 1812, Bd. i, p. 494.

[9] Ibid.

[10] "Observations pathologiques propres à éclairer plusieurs points de physiologie." Paris, 1816.

[11] "Bulletin de la Soc. Méd. d'Emulation de Paris." 1824, p. 251.

[12] "Bibl. Méd.," t. xxx, p. 381.

[13] "Collect. Academ.," Part étrang., t. ii, p. 288.

[14] v. Siebold's "Journal f. Geburtshülfe," etc. Bd. ix, p. 112.

[15] "Lancet," vol. ii, 1839.

[16] "Bulletin de la Soc. Anat.," 1873.

[17] Loc. cit.

Martin,[1] Houston,[2] Padieu,[3] Schöller,[4] Davis,[5] Tilanus,[6] Levy,[7] Gernet,[8] Luschka,[9] Cruveilhier,[10] Ayres,[11] Ogle,[12] Ward,[13] Steenberg,[14] Hirschsprung[15] (3 cases), Maschka,[16] Boucher,[17] Annandale,[18] Porro,[19] Polaillon,[20] Ilott[21] (2 cases), and Mackenzie,[22] and specimens in the Museums of the Royal College of Surgeons of Ireland,[23] of the Boston Society of Medical Improvement[24] (2 cases), of the Washington Medical College,[25] and of the Royal College of Surgeons of England[26] (3 cases).

The three cases in which there was a communication with one of the bronchi are those of Levy,[27] Hirschsprung,[28] and the example in the Dupuytren Museum at Paris.[29]

Of intercommunication between the œsophagus and trachea (the œsophagus being otherwise normal) there are two cases, viz., those of Lamb[30] and Pinard.[31]

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[1] Loc. cit.

[2] "Dublin Hosp. Rep." London, vol. v, p. 311.

[3] "Bulletin de la Soc. Anat.," 1835, t. x, p. 95.

[4] "Neue Zeitschrift f. Geburtskunde." Berlin, 1838, vol. vi, p. 2.

[5] "Lond. Med. Gaz.," Jan. 13, 1843, vol. xxxi, p. 543.

[6] "Verh. van het Genootschap de Genees en Heelk. te Amsterdam," 1844.

[7] "Neue Zeitschrift f. Geburtskunde." Berlin, 1845, vol. xviii, p. 436.

[8] Oppenheim's "Zeitschrift," 1847, p. 378.

[9] "Virchow's Archiv." 1848, vol. xlvii, p. 178.

[10] "Traité d'Anat. pathol. génér." Paris, 1849, t. ii, p. 232.

[11] "Path. Soc. Trans.," 1852, vol. iii, p. 91.

[12] Ibid, 1856, vol. vii, p. 52.

[13] Ibid, 1857, vol. viii, p. 173.

[14] Hirschsprung: op. cit., p. 37. [15] Ibid., pp. 39–50.

[16] "Allg. Wiener Med. Ztg.," 1862, No. 9, p. 78.

[17] "Bulletin de la Soc. Anat.," 1868.

[18] "Edin. Med. Journ.," Jan., 1869, vol. xiv, p. 598.

[19] "Annal. Univ. de Méd.," t. ccxvii, p. 421.

[20] "Gaz. des Hôpitaux," July 17, 1875.

[21] Trans. Path. Soc. Lond., vol. xxvii, p. 149.

[22] Published in detail at the end of this article.

[23] "Catalogue Royal Coll. Surg. Ireland." "Anatomy," vol. i, p. 152. Dublin, 1834, Spec. G[a] 53.

[24] "Catalogue Boston Soc. of Medical Improvement." Spec. No. 456 ; 2d case, No. 457, p. 128.

[25] "Catalogue Mus. Washington," D.C., 1867.

[26] "Catalogue Mus. Roy. Coll. Surg. Eng." "Teratological series." London, 1872. Specs. 394, 395, 396.

[27] Loc. cit. [28] Op. cit. [29] Specimen No. 51.

[30] "Philadelphia Med. Times," 1873, p. 705.

[31] "Bulletin de la Soc. Anatom.," 1873.

Of membranous obstruction there are two cases, in which the œsophageal canal was completely blocked up, viz., those of Rossi [1] and Tenon; [2] and one in which a valve-like opening allowed food to pass with difficulty. In the case of Rossi the obstruction was just above the cardia, and the infant died on the third day; Tenon's case was similar, but the obstruction was in the upper part of the œsophagus. In the remaining case it is not absolutely clear, though it appears highly probable that the malformation was congenital.

The following are the particulars: [3]—An old woman had manifested great difficulty in swallowing *from early infancy.* Except when she took her food in very small morsels œsophageal vomiting came on. After death a dilatation of the œsophagus was found. About six fingers' breadths below the pharynx there was a completely circular valve, with an opening about one centimetre in diameter. This valve seemed formed by a transverse folding inward of the mucous membrane, involving the whole circumference of the tube, the opening being strengthened by firm circular tendinous fibres which gave it great solidity.

Of congenital pouch there is perhaps one example, viz., that of Blasius,[4] but the case is not given in sufficient detail to show whether the malformation was congenital or acquired.

Of longitudinal division of the œsophagus there also exists one example, due likewise to Blasius.[5]

The essential *cause* of congenital malformation of the œsophagus is involved in the same obscurity that hangs over the whole subject of teratology. It is obvious, however, that it must arise in connection with abnormal conditions, either in the spermatozoon, in the ovum before impregnation, or in the embryo. That the first cause is sufficient to

[1] "Memorie dell' Academia delle Scienze di Torino," vol. xxx, serie 1ra, pp. 155–170.

[2] Fourcroy: "La Méd. éclairée par les sciences phys.," t. i, p. 301.

[3] "Bolletino delle Scienze Mediche," t. xix, p. 267.

[4] Loc. cit. Many cases of œsophageal pouch have been recorded, but as far as I am aware, in every instance the subject has been an adult.

[5] Ibid. Fig. 2.

produce malformation is proved by the fact that the same male occasionally produces a similar deformity in the offspring of different women.[1] With reference to the second cause, it is well known that unimpregnated ova are not infrequently diseased, and it is highly probable that such ova, if fertilized, would in some cases produce a malformed fœtus. At the same time, so far as I am aware, no observations have been made in connection with the female element in reproduction analogous to that mentioned above in referring to the male element; that is to say, there is no instance on record in which the same female has by different males given birth to infants with a similar deformity. It is probable, however, that it is the third cause which is the most potent, and that by far the larger number of malformations of the œsophagus are due to disease of an embryo previously well formed, the main argument in support of this view being that even in cases where the œsophagus is partly absent, there are almost always traces of the obliterated portion. The most generally accepted view of the immediate cause of œsophageal malformations is that they depend on "arrested development."[2] This view is probably correct, but it does not go far enough; it does not explain the cause of the arrested development. Schöller[3] considers that if the deformity were entirely due to imperfect evolution it would be more frequently met with, and Luschka[4] suggests that both influences, viz., disease and irregular development, are at work, and that in those cases in which the œsophagus and trachea intercommunicate, the process of events is somewhat as follows: First, the canal of the œsophagus becomes obstructed, then hypertrophy of the portion of the œsophagus above the point of obliteration takes place, and the formative matter, being exhausted by the excessive development of the pouch, is not sufficient to close up the opening between the two canals. Hirschsprung[5] considers that the entire absence of anything in the least degree resembling a cicatrix refutes the idea of de-

[1] Meckel: "Handbuch d. Pathol. Anatomie." Leipzig, 1812, vol. i.

[2] Meckel: loc. cit.; Bischoff: "Beiträge zur Lehre von den Eyhüllen des Menschlichen Fötus." Bonn, 1834.

[3] Loc. cit.

[4] Loc. cit.

[5] Op. cit.

structive ulceration, but it is probable that the effects of inflammation and ulceration occurring in the earliest period of fœtal life would be entirely obliterated at the time of birth. The frequent coexistence of other deformities with malformation of the œsophagus has been regarded as evidence that the latter depends on imperfect evolution, and not on disease. This is merely begging the question; the facts sustain equally well the theory that in such cases the embryo is extensively diseased.

If a glance be taken at the normal development of the œsophagus and trachea, as recently described by Kölliker,[1] it will facilitate the comprehension of the mode in which the malformation may arise through some slight morbid deflection of the normal process.

The whole intestinal canal, from the mouth to the anus, is formed of three segments, *i.e.*, a middle portion and two extremities. The former is called "the primitive intestine," the latter are the "cephalic" and the "pelvic" portions.

The primitive intestine is formed in mammals by the separation of the hypoblast and a layer of the mesoblast from the germinal vesicle. At first it consists of a groove or "semi-canal," but soon becomes transformed into a complete tube. Like the whole intestinal canal, this primitive intestine is also divided into three portions, an anterior, middle and posterior. It is from the anterior portion that the pharynx, œsophagus, larynx, trachea, and lungs are developed. The opening of the primitive lung into the anterior portion of the primitive intestine is situated in mammals at the junction of the pharynx and œsophagus. In rabbits, on the tenth day, the anterior portion becomes differentiated into a ventral and dorsal division. The ventral part is the germ for the lungs, larynx, and trachea, whilst the dorsal portion is the nucleus of the pharynx and œsophagus. The lower part of the ventral division becomes expanded to form the lung, which at that time consists of a semi-canal terminating in two vertical grooves, and freely communicating on its dorsal side with the œsophagus by means of a linear fissure, somewhat wider at its lower end. A separation of the two organs takes place on the eleventh day, the anterior portion of the primitive intestine being thus differentiated into an anterior or tracheal segment, and a

[1] "Entwicklungsgeschichte des Menschen." Leipzig, 1879, p. 810, etc.

posterior or œsophageal segment. The separation proceeds from behind forward up to the level of the laryngeal orifice in the pharynx, and gradually becomes more and more complete. Above the laryngeal aperture no demarcation takes place between the air-passages and digestive canals. The process just described occurs in the human embryo in exactly the same manner. Kölliker saw an embryo of four weeks in which the two tubes were almost completely separated, only a thin membrane intervening between them. The sac-shaped lungs constituted at that time a prominence at the lower end of the œsophagus, covering it on each side like a saddle. Whether at that time a fissure-like communication still existed between the tracheal and œsophageal tubes does not appear clear from Kölliker's description. In any case, however, by the beginning of the second month, in all probability, the entire separation of the two tubes is an accomplished fact.

The cephalic portion of the intestine originates from the epiblast. It grows backward to meet the pharyngeal extremity of the anterior part of the primitive intestine, until they are only separated by a thin membrane (the pharyngeal membrane of Remak)[1]. The membrane then disappears, and its residue forms the arcus palati and uvula.

The *symptoms* of congenital malformation of the œsophagus are so characteristic, that when present they will at once be recognized. The infant may appear healthy whilst at rest, but the moment it attempts to swallow, the most distressing attacks of suffocation supervene, and there is great danger of one of these proving fatal. In Porro's case, actual suffocation appears to have taken place through a large quantity of milk passing into the air-passages; but as a rule the infant becomes gradually weaker, and expires at the end of a few days from exhaustion. When the deformity is high up, the malformation can sometimes be perceived by passing the finger down the pharynx of the infant. In other cases, the use of a bougie will allow the

[1] The two cases of "obliteration" of the œsophagus, and probably some of the examples of "blind termination," probably depend on the non-obliteration of this normal embryonic membrane, and it might have been expected that obstruction of the *pharynx* itself would sometimes result from the same arrest of development. I am not aware, however, of the existence of any such case. It may be added that common as is pouch of the pharynx there do not appear to be any proved examples of congenital deformity on record.

condition of the canal to be made out, the instrument being arrested at the end of the œsophageal pouch. Although in most cases no instrument reaches the stomach, meconium is often passed.

The *pathology* varies according to the nature of the deformity. In those cases in which the œsophagus is absent, the pharynx ends in a cul-de-sac, and the stomach is generally adherent to the diaphragm. Of the five cases, one was an anencephalous monster; in another the pharynx, larynx, and trachea were absent; and in two the condition of the other organs is not stated. In cases of blind termination, the gullet may terminate quite high up, as in Roederer's case, or may reach nearly to the stomach, as in that of Warner. In the records of this class of cases, the other organs—especially the intestinal canal—generally show a wide departure from the normal form: thus, in one case[1] the stomach was deficient, the intestinal canal consisting of two parts, one comprising the colon and rectum, the other the small intestine; the latter terminated at both ends in a blind sac, and the upper portion of the larger bowel was closed in a similar manner. In another case,[2] the intestinal canal was divided into four parts, each terminating at both ends in a blind extremity, the anus being absent. In a third case,[3] the fundus of the stomach was deficient, but in its place was a wide round opening, the edges of which were formed of muscular tissue. In a fourth case,[4] the brain was imperfectly developed, and the upper part of the œsophagus communicated through the vertebral canal with the mouth. In a fifth case, the subject was an anencephalous monster.[5] In other examples of this variety of malformation the condition of the viscera is not stated. The cases, however, in which there is deficiency of a greater or less amount of the middle third of the œsophagus, with inosculation of the gullet and air-passages, are the most common, and the most interesting to the pathologist. Here the upper part of the œsophagus

[1] Roederer: loc. cit.
[2] Marrigues: loc. cit.
[3] Pagenstecher: loc. cit.
[4] Lallemand: loc. cit.
[5] Pinard's second case: loc. cit.

usually terminates in a dilated pouch about half an inch above the bifurcation of the trachea, whilst the lower portion generally originates from the trachea still closer to the bifurcation, and passing downward enters the stomach in the usual way. The portion of the œsophagus immediately proceeding from the trachea is generally very narrow, but as it descends it acquires its normal size. The upper portion, or pouch, is always much dilated, and its walls considerably thickened. Sometimes the pouch-like expansion is limited to the œsophagus (as in my case), whilst in others (as in those of Ilott) the enlargement involves the pharynx also. The two separate portions are generally connected by a small band of muscular or tendinous fibres. In my own case (see Fig. 1 B) the lower extremity of the pouch actually overlapped the lower section of the œsophagus where it proceeded from the trachea. On dividing the œsophagus, the lining membrane is almost invariably seen to be perfectly free from disease. In only one[1] out of all the recorded cases is there any mention of ulceration of the mucous membrane, and in this case it was superficial, and no doubt caused by the retching and straining which occurred on attempting deglutition. On dividing the trachea, the opening of the œsophagus may generally be seen as a small aperture situated in the posterior wall of the trachea and directed downward. Sometimes the opening is described as oval and sometimes as round, but in my specimen (Fig. 1 *C*, *b″*) the aperture is distinctly crescentic—the crescent being directed downward. In this specimen (Fig 1 *C*, *a″*) the hypertrophied pouch of the œsophagus forms a projection on the posterior wall of the trachea, which considerably diminishes its lumen.

As regards the associated deformities, in one instance[2] there was spina bifida, absence of anus, and a single horseshoe kidney placed over the spine. In two cases there was trifurcation of the trachea,[3] and in two others there was atalectasis pulmonum.[4] In another case the stomach and intestines were contracted.[5] The other deformities associ-

[1] Schöller: loc. cit. [2] Davis: loc. cit. [3] Hirschsprung: loc. cit.
[4] Ibid. [5] Padieu: loc. cit.

ated in different cases with œsophageal inosculation, were: malformation of the uterus;[1] combination of the male and female genital organs;[2] imperforate anus with a communication between the intestine and bladder, and deformity of the pelvis;[3] absence of right lung and atresia ani;[4] imperforate anus with intercommunication between bladder and rectum, deficiency of the radius in each arm, and clubbed hands;[5] imperforate anus with intercommunication between rectum and urethra, and right aurico-ventricular opening almost blocked up by membranous diaphragm.[6]

In only three instances is it expressly stated that there was no other deformity; whilst in nineteen cases there is either no mention of the condition of the other organs, or it is especially stated they were not examined.

The *diagnosis* of this deformity is easy—in fact there is no disease for which it can be mistaken. The absolute inability to swallow, which cannot fail to be observed from the first time the infant attempts to suckle, is characteristic; whilst, if a measured quantity of milk be administered with a teaspoon, and the ejected fluid collected, it will be found that it is all returned. The diagnosis can be further verified by the passage of a catheter. In new-born children the minimum diameter of the œsophagus is four millimetres, whilst the distance from the border of the gums anteriorly to the cardiac orifice of the stomach is seventeen centimetres.[7] If, therefore, a catheter of suitable size cannot be passed the distance indicated, it may be presumed that there is a congenital obstruction.

It need scarcely be said that the *prognosis* is most unfavorable. As already stated, infants born with a malformation of the œsophagus generally succumb in a few days, the duration of life probably depending more upon the vigor of the child when born, than on the exact nature of the malformation. Thus, in 5 cases of complete deficiency of the œsophagus, one infant lived seven days, another eight days, a third "a few days," whilst in the two other cases

[1] Spec. 457, Boston Museum.
[2] Levy: loc. cit.
[3] Hirschsprung: op. cit.
[4] Maschka: loc. cit.
[5] Pinard's first case: loc. cit.
[6] Polaillon: loc. cit.
[7] Mouton: "Du Calibre de l'Œsophage." Paris, 1874, p. 61.

there is no information on this point, though, from the context, it is possible that the infants were both born dead. In 8 cases of blind termination three infants lived to the third, fourth, and fifth day respectively, whilst in 5 cases the duration of life is not stated. In 37 cases, in which there was inosculation between the œsophagus and air-passages, the duration of life was as follows:

Date of Death.	Cases.
Two hours after birth	1
Second day.	9
Third day .	4
Fourth day	6
Fifth day .	3
Sixth day .	1
Seventh day	1
Ninth day .	1
Eleventh day	2
Twelfth day	1
A few days	1
Not stated	7

In one of the cases in which the œsophagus and trachea intercommunicated, whilst the œsophagus was otherwise normal, the patient lived seven weeks. The cause of this comparatively long existence will be understood from the following description:

"In the median line, nearly half an inch below the lower border of the cricoid cartilage, was a fistulous communication between the two tubes, having a longitudinal diameter of three lines, and a transverse diameter of one line. The direction of the fistula was downward and backward, the opening in the œsophagus being at a lower level than in the trachea; the edges were smooth and rounded, and the mucous membrane normal. The danger of passage of the contents of the œsophagus into the trachea appears to have been guarded against to some extent by the close apposition of the walls of the fistula."[1]

In one of the two cases of membranous obstruction of the œsophagus, the patient lived to the third day; in the other instance, the duration of life is not stated.

In none of the recorded cases was any curative *treatment* adopted, and it is obvious that but little hope can be entertained of relief by art, as the opening into the air-pas-

[1] Lamb; loc. cit.

sages, which is so often present, would probably interfere with the maintenance of life even if the œsophageal canal were patent throughout. Mr. Holmes [1] thinks that where no tracheal communication can be made out an operation might be attempted. "The object," he observes, "would be to cut down upon the point of a catheter passed down to the pharynx, and then to attempt to trace the obliterated œsophagus down the front of the spine, until its lower dilated portion is found. A gum catheter would then be passed through an opening made in the upper portion, and so into the stomach through the lower portion. If the two portions are near enough to be connected by silver sutures over the catheter, and if the latter can be retained until they have united permanently, success might possibly be maintained." Such an operation would evidently be extremely hazardous and difficult, if not impracticable. Gastrotomy has been recommended by Sédillot, who remarks: "In all cases where the œsophagus is simply obliterated, atrophied or interrupted. gastrotomy would give the hope of saving the infant, without any accident except that of the operation itself. If there exists a communication between the lower end of the œsophagus and the trachea, there is a risk that food received into the stomach would be regurgitated into the air-passages; but the narrowing of the abnormal opening, and its natural tendency to close, would afford some security against such an inconvenience." Whilst quoting the views of the eminent gastrotomist, I cannot endorse them as I consider that section of the stomach and the subsequent alimentation of a newly-born infant could not be attended with satisfactory results.

The following case illustrates the malformation:

In September, 1879, I was consulted (on the advice of Dr. Walker, of Putney) by the father of a male infant, eight days old. The history of the case, as supplied to me by Dr. Walker, is as folllows:

Mrs. S., a primipara, gave birth to a male infant in September, 1879. At birth the child was feeble and badly nourished, and had difficulty both in breathing and crying; there was also a constant

[1] "The Surgical Treatment of the Diseases of Infancy." 2d ed. London, 1869.

rattling noise in the throat, which continued in spite of all efforts to remove the mucus. On the following day milk and water was given, but it was at once rejected through the mouth and nostrils ; later in the day the breathing became more troubled. Dr. Walker administered a measured quantity of milk and water, and having taken steps to receive all that was ejected from the mouth and nose, found that nearly all the ingesta were returned. Next day the child was able to keep down a very small quantity of milk, but he had become intensely emaciated, and appeared to be sinking. Enemata of milk and lime water were given, and a small quantity of brandy and water was occasionally administered by the mouth. On the fourth day Dr. Fenn, of Richmond, saw the child with Dr. Walker, and they agreed to pass a gum elastic catheter down the pharynx ; they found its course completely arrested about two inches below the cricoid cartilage. During the next few days the child seemed to improve, the breathing became easier, and crying and coughing much stronger. Drs. Walker and Fenn having arrived at the conclusion that the case was one of deficiency of a portion of the œsophagus, consulted me as to whether I was prepared to perform any operation with a view of overcoming the difficulty. I did not feel myself justified, however, in recommending any operative procedure, and the child died from exhaustion on the eleventh day after birth.

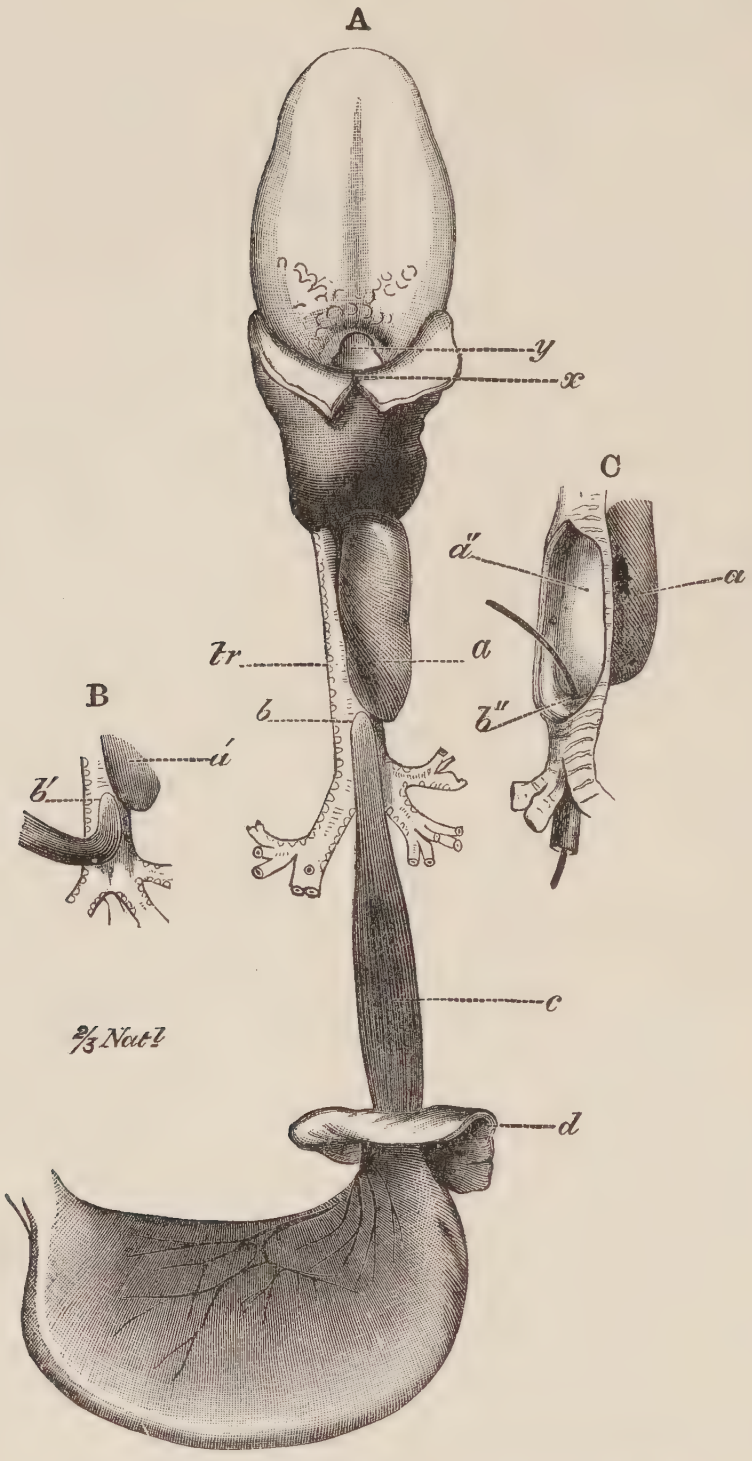
The father of the infant stated that a former wife had given birth to a child which died after nineteen days with exactly the same symptoms as those recorded in this instance. No other child of his had any malformation.

A *post-mortem* examination, limited to the throat, was made by Dr. Walker and Mr. Hovell, with the following results :

The infant was of ordinary size and well formed, but much emaciated. There was no malformation of the lips or palate. The pharynx was of normal configuration, but slightly constricted at its junction with the œsophagus, which consisted of two portions, an upper part, which communicated with the pharynx, and a lower portion which, originating from the stomach, passed upward and terminated in the trachea.

The upper portion of the œsophagus terminated in a blind extremity two centimetres and a half below its origin. The whole of this portion of the œsophagus was hypertrophied, so that it measured three centimetres in circumference.[1]

[1] The ordinary circumference of the œsophagus at birth is from one and a half to two centimetres, but it seldom exceeds one centimetre and eight millimetres.



CONGENITAL MALFORMATION OF THE ŒSOPHAGUS.

A.—The tongue, pharynx, trachea, imperfect œsophagus, and stomach. *a*, the upper portion of the œsophagus; *b*, the termination of the lower portion of the œsophagus in the trachea; *c*, the lower fourth of the œsophagus which is seen to be well developed; *d*, a small remnant of the diaphragm; *tr*, the trachea; *x*, the upper part of the pharynx, cut in the middle and turned down; *y*, the epiglottis. B.—Fragmentary illustration showing the posterior surface of the trachea and the two terminations of the œsophagus, where the abnormality exists. The upper extremity of the lower portion of the œsophagus, *b*, is thrown on one side, in order to show that it has no connection with the trachea, except just at the point where inter-communication takes place; the relation of the lower extremity of the upper portion of the œsophagus is also distinctly shown. C.—The lower portion of the trachea divided in front by a vertical incision, with its two sides widely separated. *a* is the œsophageal pouch; *a''* shows the indentation in the posterior wall of the trachea caused by the pouch; *b''* is the opening between the trachea and the upper extremity of the lower portion of the œsophagus; a piece of twine is seen passing from the trachea into the œsophagus, which has been (diagrammatically) divided in order to show the passage of the twine.

Ascending from the stomach, the lower end of the œsophagus passed upward in the usual manner, but three and a half centimetres above the diaphragm its muscular fibres suddenly became thinner and paler, and the volume of the tube diminishing in size, it terminated in the trachea immediately beneath the lower end of the upper division of the œsophagus. The connection between the two parts of the œsophagus was maintained by a narrow muscular fasciculus, which passed from the upper extremity of the inferior portion to the under surface of the upper part, and by a thin membranous expansion which intervened between the two portions. On dividing the trachea vertically in front, the lower part of the upper portion of the œsophagus was seen to form a distinct projection on the posterior wall of the trachea, considerably diminishing the antero-posterior diameter of the latter tube. Situated transversely on the posterior wall of the trachea, at a point just below the level of the lower end of the upper section of the œsophagus, was a minute crescentic opening, directed downward and backward, which led into the lower portion of the œsophagus.

Harley Street, London.

N. B.—The author of this article will feel greatly indebted to any gentleman who will give him particulars of any unpublished case, or refer him to the report of any case which may have escaped his notice.

NOTES ON TRACHEOTOMY.

By DAVID FOULIS, M.D.,

GLASGOW.

IN this paper I wish to discuss some points in connection with the opening of the windpipe. I have had occasion to perform this operation 20 times, in various places; but my remarks apply, in the meantime, to the opening of the *trachea*, of which I have had 12 cases; and I leave out of consideration 3 cases of thyrotomy and 5 cases of incision into the crico-thyroid membrane.

The first point to which I would draw attention is the size of the tube to be used at different ages. This is particularly important in very young children, but is not beneath attention even in adults. The youngest patient in my list was a female child aged 6 months, who, four days before I saw her, had "caught cold." The symptoms were at first very slight, but a certain amount of dyspnœa set in, and gradually increased to such an extent as to cause alarm. Active medical treatment failing to give relief, I was asked to perform tracheotomy. When I saw the child at 10 P.M., on November 11, 1879, it was in an agonizing state of dyspnœa; the skin pale and clammy; the lips pale blue in tint; at each inspiration the eyebrows rose, the forehead wrinkled, and the supraclavicular and lateral costal regions sank in; while the noisy inspiration and expiration indicated an advanced degree of laryngeal stenosis. There was no membrane on the fauces, nor any suspicion of diphtheria; and the diagnosis of simple acute laryngitis appeared to be quite clear. No time was to be lost, as the child was fast

becoming exhausted, and, therefore, Dr. Lothian, having put her under the influence of chloroform, I cut down on the trachea. At this early age the trachea is a very small, soft tube, not easily perceptible by the finger, so delicate are its rings; and the larynx too is soft and yielding. For this reason I selected as my guide the ring of the cricoid, which, from its shape, offers more resistance and indicates precisely the upper end of the trachea. I exposed the upper four tracheal rings, cutting through, of course, the isthmus of the thyroid body, and incised the trachea at that point avoiding the cricoid. There arose in my mind a doubt as to the propriety of putting in the smallest tracheal tube which I had been able to procure. Some observations of my own,* and the published measurements by M. Marc Sée,† had taught me that the diameter of the trachea at birth is not more than 4 or 5 *mm.*; and that for several months after birth this size is not much altered. Now my smallest tube measured 5 *mm.* external diameter at the point, which would have completely filled the trachea, and I thought might cause erosion if the tube were left in for any length of time. To avoid this, I contented myself with the introduction of the inner tube only: and as soon as possible, a tube was made by a silversmith with an outside diameter of 4 *mm.* This new tube (Fig. 1) was of equal diameter throughout, of silver, and of very plain pattern. At the suggestion of the patient's father, the inner tube was made to project a little at the front in order to facilitate its removal for cleaning; and all loops and hooks were omitted. I was delighted with this tube; it was easily understood and worked by the patient's attendants; and small as it was, the lumen of the inner tube (3 *mm.*) gave ample room for respiration. Recovery went on steadily. Thirty-two days after the operation, the stenosis of the larynx had disappeared so as to permit of the removal of the tube; and in a few days more the wound healed up. Unfortunately, about 10 days after this the baby again caught cold, pneumonia set in (without any laryngeal

* See paper by Dr. Hugh Miller in *British Medical Journal*, November 17, 1877.

† See *Lancet*, July 13, 1878, page 58.

stenosis) and carried her off. But the operation may be fairly claimed as quite successful.

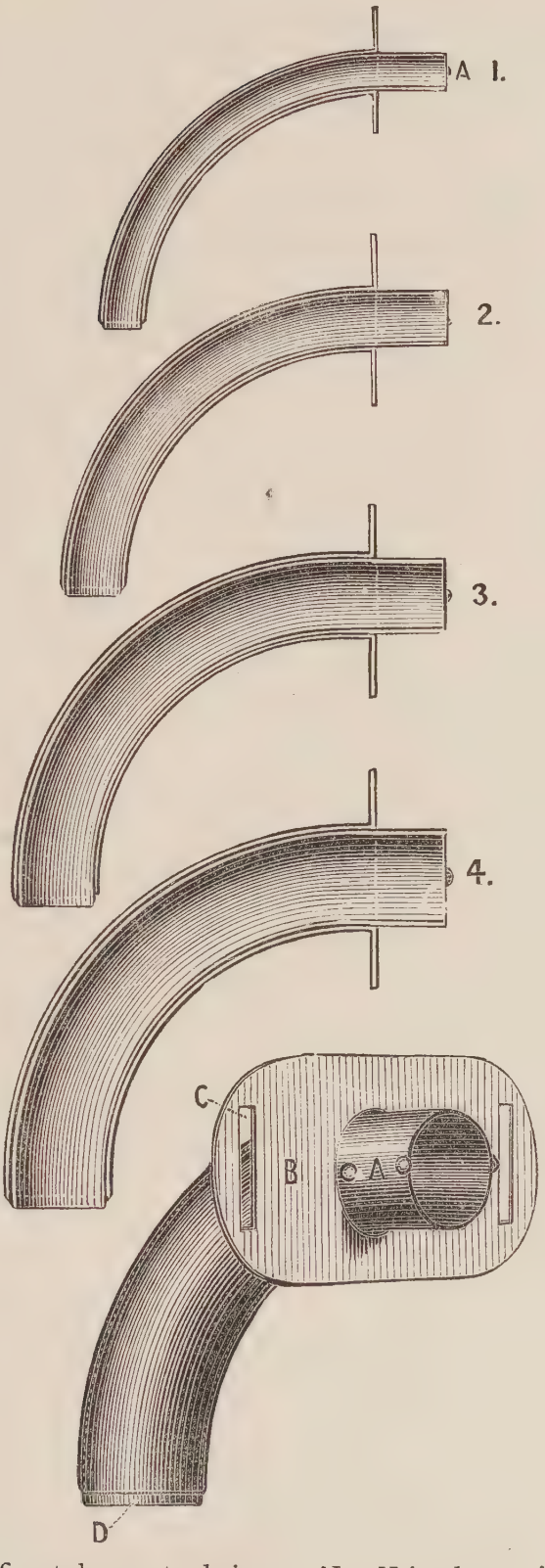
In March, 1880, another case of nearly similar nature in a female child aged 17 months, with excessive dyspnœa, occurred in the practice of Dr. John Wilson, who asked me to see her. We decided on tracheotomy, which I performed in the same way as in the previous case, my incision passing through the isthmus of the thyroid gland. The same 4 *mm.* tube was again used, with perfect comfort and freedom of breathing. The patient was able to dispense with the tube in 20 days, and made an excellent recovery.

Following up the idea of carefully adapting the size of the tube to the individual case, I have had a set of 5 tubes made, graduated to scale according to M. Marc Sée's measurements, so that when suddenly called on, one may be able to select confidently a tube which is safe to fit any given case from birth onward. I say from birth onward, for a case of an unusually interesting kind has come under my notice, in which the propriety of tracheotomy at this early stage has been seriously discussed. This was the case of a male child which succumbed to laryngismus 19 hours after birth.* Every sort of sedative treatment having failed to avert death, the question of tracheotomy was raised only to be negatived. But bearing in mind the fact that three children of the same parents had previously succumbed to laryngismus shortly after birth, and that a *post-mortem* examination of the child which I attended, failed to reveal any disease or abnormality of the larynx, we have agreed that in the event of another delivery being followed by laryngismus the severe measure of tracheotomy is not to be shirked, and to this the parents have given their approval. The success of the operation in the child aged 6 months, above detailed, leads me to think that a favorable result may be got by it even at an earlier age.

Another interesting detail in performing tracheotomy is the exact seat of election for the opening in the windpipe. In books we have a tradition handed down informing us that the opening may be either above or below the isthmus of

* See *Brit. Med. Journ.*, loc. cit.

The exact curve has been decided on in view of the direction of the trachea, and to facilitate the working of the inner tube.



I. Diam. 4 *mm.* Below 18 months.

II. Diam. 6 *mm.* 18 months to 2½ years.

III. Diam. 8 *mm.* 2½ years to 10 years.

IV. Diam. 10 *mm.* 10 years to 20 years.

V. Diam. 12 *mm.* Largest size.

Set of five tubes, actual sizes. No. V is shown in half side-view to display the plate and the projecting end with retaining knobs at A. If desired, a voice-hole can be easily cut on the convexity of the outer tube; it is not desirable to cut the voice-hole through both tubes, as granulations are apt to catch on the edge of the hole. These tubes are sold by Hilliard, Glasgow.

the thyroid gland; hemorrhage is referred to as an event to be dreaded if the isthmus is cut. But some of the best authorities (Erichsen, Bryant and others), while still advising us to leave the isthmus alone, if possible, say that it may be cut without scruple when necessary. And it is not difficult to understand why this may be done, for in the isthmus at the middle line there are no blood-vessels, just as in the tongue or perineum the middle line is devoid of vessels of more than capillary size. Hyrtl failed to inject the one side of the thyroid gland from the other through the isthmus. It is quite true, indeed, that the thyroid arteries running along the capsule of the gland may send small branches across the trachea to anastomose with those of the opposite side, but these vessels are outside the isthmus, and do not belong to it. Then, in many cases, especially in children, no tube could be got in between the isthmus and cricoid without dislodging the isthmus or cutting the cricoid; and, as a matter of fact, I believe the isthmus is often cut unawares by surgeons in performing the high operation. In the fear of the isthmus with which young, and even more experienced, surgeons are imbued, serious mistakes are made. I have twice been called to make *post-mortem* examinations of children dying of diphtheria, in whom the so-called high operation had been done by other surgeons. In one of these cases the tube was pushed into the larynx at the base of the epiglottis; in the other, it had gone into the pouch of Morgagni. On the other hand, by going too low down we incur risk. The thick plexus of veins, the occasional thyroidea ima artery, and the bulging thymus gland, may all come in the way. It occurred to me, on one occasion, when performing the low operation in a woman, æt. 34, with acute subglottic œdema, to have so profuse hemorrhage from the thyroid plexus that I decided to incise the trachea higher up, through the isthmus, with the best results both as to immediate bleeding and the after cure of the patient. These facts, together with a number of minute dissections of the vessels of this part, seem to me to justify the belief that the isthmus may be selected as the safest place to open the trachea. To this I am the more impelled

by watching the effect of incising the cricoid cartilage. If a tube is to be worn, it is better not to have the cricoid cut, for its elastic spring keeps up a continual pressure on the tube, leading slowly to irritation, and, it may be, perichondritis. Twice I have removed a piece of the anterior part of the cricoid ring in cases where a tube was meant to be worn permanently, and this proved successful in averting irritation. But in merely splitting the cricoid cartilage, the result is not good.

In my last four cases I have selected the isthmus as the seat of incision, and have had reason to be satisfied with the easy access to the trachea and the absence of hemorrhage.

The incision in the skin may reach from the level of the crico-thyroid membrane to a point half-way toward the suprasternal notch. In dissecting down it is well to have two pairs of dissecting forceps, one of which is held by the operator and the other by the assistant, so that the tissue to be cut is steadily held on both sides before each cut is made. Vessels are tied as they appear. Keeping in the middle line, the isthmus may be cut, the trachea exposed, and, all bleeding having ceased, the incision may be carried into the trachea, steadying the latter either with a hook or the finger nail. In inserting the tube, the point of a pair of dissecting forceps is to be placed in the cut in the trachea, and the tube pushed along the blades, which open the trachea as the tube advances.

The tube once in, the after treatment is simple. No steaming is needed; by a piece of gauze loosely thrown over the face and neck, the air will be kept warm and moist enough for all purposes. It cannot be a good thing for a patient to have a chill fog playing over an open tracheotomy wound, as happens when steam is blown even out of a hot kettle into the air over the patient; nor does it seem good practice to enclose the bed in a tent of blankets into which steam is poured, for the free accession of pure air is thereby certainly not aided. I prefer to have the patient warmly clad, lying near the fire, but out of draughts, and with abundance of fresh air.

NOTES ON SYPHILITIC STRICTURE OF THE LARYNX, WITH AN ACCOUNT OF TWO CASES OPERATED UPON BY MEANS OF A NEW CUTTING DILATOR.

By W. MacNEILL WHISTLER, M. D., M. R. C. P.,

LONDON.

I.

THE following cases of stenosis of the larynx, which have been under my care, are types of an interesting class in which the narrowing is due to cicatricial adhesion. They were operated upon by me over two years ago, but I have purposely deferred publishing them until a sufficient time had elapsed to warrant the cure being considered a permanent one, as it is only by the records of such cases as have stood the test of time that anything like a reliable estimate can be formed of the worth of such operations.

CASE 1.—*Tertiary syphilitic ulceration of the pharynx, followed by perichondritis and ulceration of the larynx; stenosis from adhesion between the ventricular bands. Division of the laryngeal adhesions and dilatation of the stricture.*

M. A. D., æt. 31, married, applied at my clinique at the Hospital for Diseases of the Throat, on March 8, 1876, suffering from a severe sore throat. The patient, who was very weak, and with a worn appearance, gave the following history: She had been married eight years, and had had four children. She had always been well up to the birth of the third child. At that time, in 1874, she suffered from pain in the forehead, on the left side. She described it as having been red and swollen, after which it "broke

into a sore." There remained two white depressed cicatrices, each about the size of a sixpence, over the frontal eminence on the left side. Shortly after this her throat became sore, and she had suffered from it ever since. She seems to have noticed no primary lesion, and never had any general eruptions. On examining her throat I found deep destructive ulceration. The posterior wall of the pharynx was converted into a large serpiginous ulcer, extending upward to the posterior nares, and downward to a level with the centre of the epiglottis. The edges of the ulcer were ragged; the surface was uneven, and covered with a dirty yellowish-gray, tenacious, purulent *debris*. The surrounding mucous membrane was livid and much swollen. There were cicatrices about the fauces with contractions, almost total loss of the soft palate, and adhesions between the remainder and the posterior wall of the pharynx. Laryngoscopic examination showed the larynx to be healthy, with the exception of slight swelling of the left arytænoid. The posterior part of the larynx was seen to be bathed with pus, which trickled downward from the pharyngeal ulcer. Mrs. D. had a slight cough, but no dyspnœa or aphonia, though her voice was necessarily nasal in tone. The treatment that was instituted was iodide of potassium, twelve grains three times daily, and vapor of carbolic acid. In one week there was a marked improvement. The iodide of potassium was continued to the end of April, when the ulceration was healed. The larynx remained quite healthy. The patient had gained flesh and strength, and she was out of all pain. The treatment was kept up for another month, and she then ceased to attend. On June 14th she came again with a return of the pharyngeal ulceration, which, under a renewal of the iodide of potassium in fifteen-grain doses three times daily, was cicatrized in a week. The iodide of potassium was reduced to twelve grains, combined with half a drachm of syrup of iodide of iron, and this, with small doses of cod liver oil, was administered until July 5th, when the iodide of potassium was again increased to fifteen grains, owing to a node which was forming on the sternum. This lesion was very persistent, and, although the iodide of potassium was continued and even raised to one scruple three times daily, it was only by September 11th that the node was disappearing. There had been no return of the pharyngeal ulceration since June 21st, but on making a laryngoscopic examination now I found an irregular globular swelling, projecting ever the left arytænoid cartilage, and hiding about one-

third of the left vocal cord. At first sight it seemed to be a swelling of the tissue over the arytænoid, but on closer inspection the arytænoid could be seen moving out from beneath the tumor toward the median line, as the vocal cords approximated in phonation. It was evidently an outgrowth from the pharyngeal wall, at the junction of the posterior and lateral portions, springing from below the lower border of the ulcer. In color it was pale red, a little lighter than the surrounding mucous membrane. It was firm in consistence, and the portion seen in the mirror was about the size of a bean. The larynx itself was healthy, and the patient complained of no dyspnœa, which, from the position of the growth, was somewhat remarkable. The treatment was persevered in, and under this the supralaryngeal growth became gradually, though slowly, smaller, so that by November 8th it was about one-third its original size. The sternal node, which had almost entirely disappeared by the end of October, now suddenly was more inflamed again. One drachm of liquor hydrargyri perchloridi was given in conjunction with fifteen grains of iodide of potassium three times daily, and to this the lesions quickly yielded.

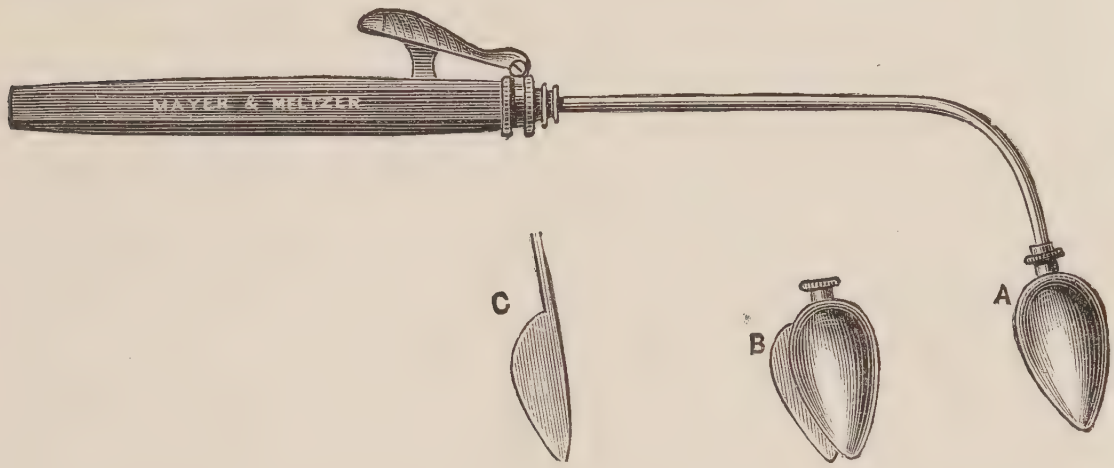
From December 6th she ceased to attend, until February 21, 1877, when she returned on account of a serious relapse, involving now principally the larynx and producing great dyspnœa. She told me, in a husky voice, that the attack had come on by her being exposed and catching cold. She had been in great distress for a fortnight. The mucous membrane of the pharynx was swollen and livid, but no ulcerations were present. The laryngoscope showed deep redness and swelling of the epiglottis, swelling and intense inflammation of the ventricular bands, with serpiginous ulceration at their anterior part, and redness, thickening, and immobility of the vocal cords, with marked narrowing of the glottis. The tumor just above the left arytænoid had increased, and it covered that side of the larynx posteriorly. She was put upon fifteen grains of iodide of potassium and one drachm of liquor hydrargyri perchloridi, as before, with inhalations of vapor benzoini. For the first two weeks she improved materially; then she fell back again, and the iodide was increased to one scruple for each dose. By May 23d the swelling in the larynx was much diminished, and her breathing was tolerably comfortable. The ulcers at the anterior portion of the ventricular bands were healing under an appli-

cation of nitrate of silver in solution (one drachm to the ounce of water), which had been made once a week from the end of April. On May 30th she came, suffering intensely from another relapse. The whole larynx was deep red, and the ventricular bands were so swollen that they completely closed over the anterior half of the glottis. There was also some œdema of both arytænoids. The dyspnœa was distressing, and I urged her to enter the hospital, but she would not. The iodide of potassium was increased to twenty-five grains, three times daily ; but as the gums were a little spongy, the liquor hydrargyri perchloridi was reduced to half-drachm doses. All local applications were stopped, but she was ordered to inhale the benzoin vapor every three hours. From this date her condition did not materially improve, and at last she entered the hospital on June 11, 1877. The same treatment was continued, together with milk diet, soup, and wine, while absolute rest in bed was enjoined. For a few days she did better, but on the 16th her breathing became more embarrassed. Mercurial inunctions were now substituted for the bichloride of mercury, the iodide of potassium being administered as before. This treatment was kept up for three days, but failed to arrest the laryngeal inflammation. On the 19th she had several distressing paroxysms of dyspnœa. The laryngoscope showed almost complete occlusion of the glottis by the overlying ventricular bands, which were so swollen as to meet in the median line. The left arytænoid was very œdematous, and encroached upon the glottic space behind, leaving only a small chink for the passage of air. As the patient was in imminent danger of suffocation, I performed tracheotomy without further delay. She was at once relieved by the introduction of the canula, and from this date her condition steadily improved. The mercurial frictions were carried out until June 27th, when she was slightly ptyalized. They were therefore stopped for a few days, and renewed on July 2d with ten-grain doses of iodide of potassium and cod liver oil. On July 10th she was able to go out for a walk ; she had been up and about the ward for a week. The swelling in the larynx had been constantly decreasing. The ventricular bands were sufficiently reduced in size to show the vocal cords at their posterior third, the left one being still, to a certain extent, overlapped by the growth which I have spoken of before. The breathing was still painful when the mouth of the canula was stopped. The frictions were reduced to one every other day, and these, with the other treatment, were kept up

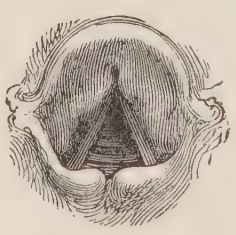
for another fortnight. By then a freer view of the larynx was obtained, when the ventricular bands were found adherent to each other in front for about one-half of their length. The mercury was stopped as the gums were a little tender. The iodide of potassium was kept up, with local applications of solution of chloride of zinc sprayed into the larynx once a day. During the next three weeks the general thickening in the larynx continued to decrease, and the growth above the arytænoid was hardly to be seen at the end of that time. Whenever the canula was closed there remained still an amount of dyspnœa, which was oppressive under exertion, and as this could be clearly accounted for by the adhesion between the ventricular bands, I commenced to dilate this stricture on August 13th. The dilator that I first used consisted of three blades that were made to diverge from one another by turning a screw in the handle of the instrument. This was introduced into the larynx every day at first, and subsequently every third day. At the end of a fortnight I had succeeded in dilating the constriction sufficiently to bring the anterior third of the vocal cords into view, and as the dyspnœa was relieved, the patient returned to her home. The good result obtained was, however, not lasting, and in September the stricture was as narrow as before. The cicatrix was, in fact, so dense and resisting that it was impossible to tear through it by means of any mere dilating instrument. Being obliged to abandon this method, and finding the introduction of canulæ equally unsuccessful, I devised an instrument which should combine the properties of a knife and dilator in one. This laryngotome is composed of an almond-shaped dilator, within which is a concealed blade. This blade is reversible, so that it may divide a stricture either at the anterior or posterior commissure of the larynx, and it can be pushed forward, when required, by means of a lever attached to the handle. The accompanying woodcuts explain the two conditions of the instrument.

I operated with it on October 3d, 1877. The dilating extremity was pushed down until it fitted tightly in the stricture, and the knife was then protruded. After a gentle movement of the handle upward and downward I felt the resisting point in the larynx yield, and I passed the dilator easily into the glottis. The almond-shaped wedge which I used on this occasion measured fourteen millimetres antero-posteriorly at its base, and eight millimetres in

thickness. On withdrawing the instrument the linear incision could be plainly seen where the stricture had been divided. On the 6th I again introduced the dilator, of course without using the knife, repeating this process on the 10th, and subsequently only once a week, as Mrs. D. could not come to the hospital more often. These long intervals were rather a hindrance to the treatment, and some thickening and induration of the cicatrix took place which threatened fresh contraction. In order to arrest this I took her into the hospital again on November 14th, and made another and deeper incision with the instrument.



From this date everything progressed favorably. The incision healed without any farther contraction, and I was able soon to pass the largest-sized dilator, measuring eighteen millimetres in width and ten millimetres in thickness, through the glottis. The instrument was passed every fourth day, and her larynx was sprayed every day with the chloride of zinc solution. By the middle of December the stricture remained completely dilated. There was still some slight thickening of the ventricular bands and redness of the vocal cords, otherwise the mucous membrane was quite pale. Mrs. D. could breathe with perfect ease with a cork in the tracheal canula for hours together. She was discharged on December 21, 1877. This patient continued to wear her tube for a year longer as she was pregnant, and I thought it safer to have it in place until after her confinement. She remained under observation through the winter, and she continued well. Her child was born in June, but it was not until December, 1878, that she entered the hospital. No fresh contractions had taken place in the



larynx. The vocal cords were congested and thickened, but they moved freely, and during a deep inspiration separated widely from each other, affording a free view of the trachea. There were no ulcerations in the pharynx, and her general health was good. Her voice, of course, was hoarse, but it was distinct, and did not trouble her in talking. She had been wearing a cork in the tube at intervals for many months, and her breathing with this was easy and noiseless. I therefore removed the canula early in December, 1878,

I saw her again on March 19, 1879. There was no return of the disease in the larynx. Her voice was rough, otherwise she was quite well, nor had she suffered at all since her discharge from the hospital, notwithstanding the severity of the winter.

I lost sight of her until January, 1880, at which date she continued quite well, and on examining her with the laryngoscope I found that no contraction had taken place in the larynx. The vocal cords were red and somewhat uneven, but their movements were perfect, and the glottis was widely open on deep inspiration. I discovered at this visit that there remained a narrow fistula from incomplete closure of the tracheal wound. It was no larger than would admit the introduction of a very small-sized probe, and as it was always covered over it did not serve as an aid to respiration.

She refused, however, to be operated upon any more, and so I have left it.

CASE II.—*Tertiary ulceration of the larynx, with subsequent cicatricial adhesion between the vocal cords.*

W. M. L., æt. 33, a house carpenter, formerly a seaman, applied at my clinique on October 6, 1876, on account of sore throat, hoarseness, and a troublesome cough. The attack had existed some few weeks. On examination I found him suffering from granular pharyngitis, with an old perforation of the palate on the right side. There was general hyperæmia of the larynx, with highly red and swollen vocal cords. There was no ulceration either in the mouth, pharynx, or larynx. His chin, the sides of his face, and neck were freely covered with pustular acne, but the rest of his body was free from eruptions. There were some enlarged glands in the neck, and scars from others which had suppurated.

He gave the following history: In 1869, up to which time he had enjoyed fairly good health, he contracted syphilis. He went under a course of mercury for this, and so far as his statements are reliable, no general symptoms showed themselves until 1873, when he suffered from rheumatism, nodes on the tibiæ, inflammation of the eyes, and a troublesome sore throat. During the summer of 1874 he was under treatment at the Hospital for Diseases of the Throat for a deep ulcer of the palate. Since this date he had been subject to relapsing sore throat. He was ordered iodide of potassium in ten-grain doses three times daily, with two drachms of cod liver oil morning and night. This, with applications to the larynx of a solution of chloride of zinc, constituted the treatment. His cough was soon relieved, and the condition of his larynx was much improved. In December he caught cold, and had a relapse. He now complained of pain in the larynx, with tenderness on pressure. The laryngoscopic appearances were bright redness and swelling of the epiglottis, with intense redness and thickening of the vocal cords. He was put upon a mixed treatment of iodide of potassium and mercury, and he inhaled vapor benzoini morning and night. In a week he was greatly relieved, and at the end of six weeks' treatment he was discharged cured. He resumed his work in February, and continued well until the end of April. Then he had a very bad attack, but it was not until a fortnight later that he came to me at the hospital. His voice was almost lost; his cough was incessant; and such distressing dyspnœa was superadded to these symptoms, that he was sent to the ward as an in-patient. The laryngoscope showed diffuse dusky redness of the whole larynx, swelling of the epiglottis and of the ventricular bands, which were ulcerated at their anterior part. The vocal cords were hidden, excepting just in front of the arytænoids; there they were seen to be much swollen and ulcerated. Their abduction was impaired, and the glottis was very narrow. In spite of absolute rest in bed, with large doses of iodide of potassium and mercury, and sedative inhalations, the dyspnœa grew more and more urgent, and on May 22d, one week after his admission, I was obliged to perform tracheotomy. As I thought it probable that the tube would have to be worn for some time, I introduced it below the thyroid isthmus, in order to avoid pressure from it upon the larynx. The patient had a short and full neck, and the thyroid gland extended very low down, so that the trachea was opened only a little space above the sternum. For the first two

days after the operation his temperature was raised to 101° in the morning, and 102° to 102.5° in the evening, while he suffered a good deal at times for want of sufficient air. This was eventually relieved by the introduction of a very long tube. There was dulness at the base of both lungs, with bronchial râles. Poultices were applied to the chest, ammonia and ether were administered internally, and in a few days all these distressing symptoms had subsided. By June 3d he was out of bed. The ventricular bands were still deeply ulcerated, and so enlarged that the anterior portion of the laryngeal cavity was blocked up by them. The iodide of potassium was now renewed in ten-grain doses three times daily, and the laryngeal swelling was soon much reduced. By the end of June the iodide of potassium was increased to one-scruple doses, as he complained of much pain in the sternum, radiating down the left shoulder and arm, and accompanied by violent headaches. Tenderness on pressure over the sternum followed, and by July 15th periostitis was fully developed. Mercurial frictions were added to the treatment, but the inflammation went on to suppuration. An abscess over the sternum was opened on August 9th. The laryngeal inflammation had been subdued by the treatment, and at this date the ulceration of the vocal cords was healed. The ventricular bands were still thickened, and the left band was slightly ulcerated. There remained a good deal of stridor when the canula was stopped. Tincture of the perchloride of iron was substituted for the mercury and iodide of potassium. The laryngeal ulceration was touched with a solution of chloride of zinc daily, while the ulcerated surface over the sternum was dressed with an aqueous solution of carbolic acid. On August 20th his breathing was again much embarrassed, and a distressing cough added to his suffering. There were coarse mucous râles to be heard throughout the chest, while respiration was deficient at the bases of the lungs, with dulness on percussion. Carbonate of ammonia, ether, and iodide of potassium, with rest in bed, relieved him of these symptoms in a week, and from this time he slowly but steadily progressed toward a cure. By September 17th the ulcers of the larynx were cicatrized; the thickening of the ventricular bands was in great measure absorbed, and a full view of the larynx could be obtained. It was now seen that the vocal cords were adherent to each other in front, diminishing the glottic space by nearly one-half. The patient was breathing more comfortably while at rest, even with

the canula stopped up, but he had much stridor on exertion. His voice was still very rough. The openings from the sinus over the sternum had nearly ceased discharging; he was in no pain, and was gaining flesh and strength rapidly.

On September 27th I passed the medium-sized laryngotome, already described, into the glottis, and divided the stricture between the vocal cords. After this I introduced the instrument once a day. He was discharged on November 3, 1877, still wearing the tracheal canula.

A month later I examined his larynx, and found a slight adhesion between the vocal cords remaining at the anterior commissure, which I divided as before. He remained under observation during the winter, and for a time I passed the dilator every other day. No further contraction took place. In May, 1878, one year after the tracheotomy had been performed, I removed the canula. The man returned to his employment a short time afterward, and has remained well ever since. I saw him last in the spring of 1880. There was a little thickening left at the anterior commissure of the vocal cords, but during the act of phonation they met perfectly in the median line, and during forced inspiration their abduction was only slightly impaired, and they separated sufficiently to allow a good view of the trachea. His breathing was easy and quiet, and he said that it had never troubled him under the exertion of work, or in the cold air to which he is at all times exposed. His voice was very good.

MYXOMATA OF THE LEFT LARYNGEAL VENTRICLE. SPONTANEOUS EXPULSION.

By CLINTON WAGNER, M.D.,
NEW YORK.

DURING the summer of 1876, Miss ——, of Savannah, was under my treatment for cough, caused by ulcerative follicular pharyngitis, which had annoyed her for about a year; she was anæmic and very much broken down in general health; larynx normal. She entirely recovered and returned to her home in the autumn, and continued in excellent health until February, 1880, when she caught a severe cold while on a visit to New Orleans. For three months she suffered from frequent and violent paroxysms of coughing. The cough then left her, but she became very hoarse, and articulation required quite an effort.

The following account, in her own language, accurately describes her condition: "One morning early in May, I awakened with a fearful choking sensation. After coughing once or twice, something came up into my mouth which I thought was a piece of hardened phlegm, and which in shape, size and general appearance, resembled an orange seed more nearly than anything else. My voice *immediately became almost natural, and so continued* for about a fortnight, when I became very hoarse again, and I began to feel some foreign body which interfered with speaking and swallowing; in two or three days it came up in the same manner as the former, and this was the case at intervals of from ten days to two weeks, until it must have occurred about eight times, each body being somewhat larger and requiring a greater effort to expel than the preceding. On Friday, July 9th, I was awakened about midnight by a most alarming attack. For a couple of hours I could scarcely breathe, and felt as though I was choking. The agony was intense and the relief inexpressi-

ble, when at length I succeeded in throwing out the substance (similar to the others), which I had felt distinctly, but had been unable to remove. On Sunday, July 11th, I left for New York, to consult Dr. Wagner."

On July 14th she consulted me. Her voice was very husky, almost aphonic. An examination with the mirror revealed a singular appearance : The mucous membrane of the larynx was very hyperæmic, probably from excessive coughing ; the right vocal cord was normal in appearance and action, the left was almost entirely hidden from view, by what seemed to be a swollen condition of the left ventricular band, along the inner border of which, and extending for about one-half its length, was a white line. At first I thought it an ulcer or hardened secretion ; the next day the ventricular band was more bulging and the vocal cord entirely hidden from view. On the third day, the white object had so increased in size that there was no difficulty in recognizing a growth in the left ventricle. With an ordinary laryngeal sound, I succeeded in forcing it, without difficulty, from the ventricle. I could plainly see the pedicular attachment as the polypus hung down and touched the left vocal cord. This was recognized by Dr. Howland, of the Metropolitan Throat Hospital, who was conveniently within call, and whom I requested to make an examination.

The growth was of a very white color, whiter than and unlike any laryngeal growth I had ever before seen, and this appearance helped to mislead me in my diagnosis, or rather partly served to prevent me giving a satisfactory solution of the case at my first and second examinations.

The polypus was attached by pedicle to the floor of the left ventricle near its anterior terminus. My first impulse was to introduce the forceps, seize and remove it ; but as the patient had become somewhat nervous and excited, and her larynx extremely irritable from the introduction of the sound, I decided to postpone the operation until the following day, expecting then to find her in better condition, mentally and physically, for the ordeal.

The next morning she brought me the polypus in her handkerchief and made the following statement : During the night she had had several violent paroxysms of coughing, accompanied with painful glottic spasms, which greatly alarmed her lest they should prove fatal. In the morning, while in the street-car on her way to my office, during a violent fit of coughing, the poly-

pus was expelled from the larynx into her mouth, as the others had been.

An examination with the mirror showed that the ventricular band, relieved of the mass which had pressed it upward and inward, had retracted within its normal limits. Voice was again clear and strong. The point of attachment of the pedicle to the floor of the ventricle and near its anterior terminus, was distinctly seen. This I touched thoroughly with solid nitrate of silver, and for six days subsequently, I made insufflations of tannin and iodoform into the ventricle.

One week after the expulsion of the polypus, I left for Europe. During my absence, Miss ——, annoyed by an uneasy, tickling sensation in her throat, and fearing that another polypus had formed, although she had neither cough nor glottic spasms, went to Philadelphia for the purpose of consulting Dr. Solis Cohen. An examination by that gentleman revealed nothing, as far as I could learn from the patient, but a hyperæmic condition of the mucous membrane, which yielded to proper local applications.

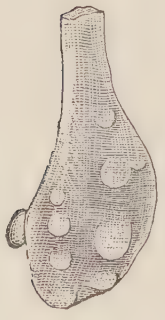
I have seen and examined the patient frequently since my return. Up to the time of writing (Nov. 20th), four months since the expulsion of the last polypus, there has been no recurrence.

The following is Dr. Heitzman's report, to whom the tumor was submitted for microscopical examination:

Clinton Wagner, M. D.

Dear Doctor:

The tumor from the left laryngeal ventricle of a lady, which you have sent for examination, is a great rarity and as such of considerable interest. The size of the tumor is that of a small peanut; it is slightly pear-shaped; its color grayish-white; its consistency jelly-like.



After hardening in a half-per-cent. solution of chromic acid, transverse sections were made from the blunt end of the tumor; it showed a shell of about a half millimetre in width, and a yellowish centre, the latter being in some places in close connection with the former.

Under the microscope the shell proved to be of a myxomatous structure, built up by protoplasmic strings in a reticular arrangement, in close resemblance with the structure of the umbilical

cord. The meshes were filled with a fine reticulum of coagulated fibrin and numerous lymph-corpuscles. The central portion consisted on its periphery of a coarse reticulum of coagulated fibrin, blending with that of the myxomatous portion, also supplied with numerous lymph-corpuscles. The main mass of the central portion, however, is coagulated albumen only.

The tumor is a *myxoma* (polypoid tumor) of a strictly benign character. Evidently it had grown in the vicinity of a large, perhaps varicose, submucous lymph-vessel, which, by bursting, produced an inundation of the tumor with lymph. This fluid partly destroyed the myxomatous structure, and completely replaced it in the centre.

Yours truly,

C. Heitzmann.

Remarks.—As doubts may arise, as to the larynx having been the seat of development and attachment of the polypi spontaneously expelled in the extraordinary manner above detailed, the following may be offered in support of the statement. For several days preceding the expulsion of each, there were paroxysms of coughing, severe glottic spasms, hoarseness amounting at times to aphonia, tickling and the feeling of "something being there." To this may be added the statement of the patient, that they all resembled each other in color, consistency and size; the one represented by the wood-cut was seen by Dr. Howland and myself by aid of the mirror, and was actually touched and moved from its position with a laryngeal sound. In regard to their rapid development and recurrence, the explanation offered by Dr. Heitzman, that they had grown in the vicinity of a large lymph-vessel should be sufficiently satisfactory.

Virchow, Lücke, Green, and other authorities, describe the myxomata as consisting of a soft, semifluid, quivering mass, resembling gelatine. The mucous tissue is also soft, gelatinous and semitransparent, whose intercellular substance consists of mucin, in which are here and there spindle, star and round cells.

These tumors are also frequently found in fat tissues. We have the subcutaneous, intermuscular and subse-

rous varieties; they are also associated with the development of the lipomata. We also find them in the marrow of bones, which may be regarded as a modification of fat tissue, in the brain and spinal cord, and especially in the peripheric nerves (as neuromata). Among glandular organs where they are developed out of interstitial tissue, the mammary and parotid take precedence.

Myxomata of the larynx are very rare. Mackenzie * has not met a "single instance in which a laryngeal neoplasm was entirely of a myxomatous nature."

Cohen,† in a tabulated list of 67 cases of benign and malignant laryngeal growths occurring in his own experience, does not record a single case of myxoma. In 40 cases of laryngeal growths in my private and hospital practice, the one above detailed is the only myxoma I have encountered.

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* Diseases of the Throat and Nose, vol. i, p. 312.

† Diseases of the Throat and Nasal Passages, p. 537.

THE TONSILS; THEIR GENERAL, SURGICAL, AND MINUTE ANATOMY.

By D. BRYSON DELAVAN, M. D.,

NEW YORK.

OF all the internal organs of the body, none are more easy of observation than the tonsils. And yet, with an almost complete knowledge of their appearance, relations and anatomical construction, there are few parts whose physiology and pathology are so unsatisfactorily explained. The following description of the normal tonsil, is offered as a point of departure for further investigation of this interesting and important subject.

The tonsil consists essentially of a reduplication, more or less extensive, of the oral mucous membrane, which contains in its folds certain anatomical elements of an unusual nature. It may be defined as a distinctly localized aggregation of a peculiar tissue, so developed as to give it an identity, and, in all probability, a special function, of its own. Its gross structure varies in different animals. In some it is altogether wanting. Its simplest form is found in the rabbit, where it resembles closely a large lingual follicular gland. In the lion, and in some other of the larger animals, it is an almost cylindrical pocket, with thick walls and opening into the pharynx through a somewhat narrow orifice; while in the grizzly bear its surface presents a laminated appearance, due to a longitudinal disposition of its folds. In man many variations occur, according to age and individuality, and in some instances resemblances to the types described above have been observed. In early infancy it is

sometimes impossible to demonstrate the presence of the tonsil at all, while in other cases it has been found in a condition of marked hypertrophy soon after birth. Its period of greatest activity is just before puberty. It atrophies with old age. Its usual shape is ovoid, and it more or less completely fills the triangular space between the anterior and posterior pillars of the palate. Its base is generally defined clearly, and corresponds with the greatest antero-posterior diameter of the tonsil. Its average vertical diameter is 20 mm., and its transverse diameter is 13 mm. Often a collection of glands lies below the tonsil, and sometimes a few above it, large enough to look like a small additional tonsil. Sometimes it extends as a narrow but slightly elevated strip far lower down in the pharynx than the usual limit. Normally it corresponds to the angle of the lower jaw. The surface of the tonsil is perforated by a varying number of slit-like and circular depressions, the common orifices of the system of cavities which it contains. If the tonsil of the rabbit be considered as a single lingual follicular gland, we have in man a multiplication of this to the number of from eight to eighteen, the interval between each gland forming a lacuna tonsillaris, crypt, or one of the system of cavities mentioned above. There are also in the interior of the tonsil single larger cavities, each of which includes several follicular folds and procures their common discharge at the periphery. The crypts of largest size and greatest depth are, as a rule, found in the middle part of the tonsil. The crypts generally are filled more or less with a yellowish substance, composed of fat molecules, loosened pavement epithelium, lymph corpuscles, small molecular granules, and cholesterin crystals, which probably proceed from retained and decomposed epithelial matter, and, perhaps, now and then, from the bursting of follicles whose cells have increased by proliferation and have undergone a retrograde metamorphosis and fatty degeneration.

From its peculiar position with regard to important adjacent parts and from the frequency with which operative interference is called for in the treatment of pathological con-

ditions to which it is liable, the surgical anatomy of the tonsil is of the utmost interest.

The average interval between the free borders of both tonsils has been estimated to be 2.5 centimetres, so that when the mouth is closed the inner aspect of the tonsil touches the tongue. In cases of normal size the tonsil extends but very slightly beyond the anterior palatine arch, which is formed by a projection of the palato-glossus muscle, and not at all beyond the posterior palatine arch, which is formed by a projection of the palato-pharyngeus muscle. With both of these muscles it has fibrous attachments. In operating upon the tonsil, the anterior pillar of the palate should not be wounded, as persistent hemorrhage is almost sure to result. A loose submucous cellular tissue extends over the place of transition of the mucous membrane of the anterior and posterior palatine arches toward the pharyngeal side of the tonsil, which facilitates infiltrations and the formation of abscesses, particularly in the anterior arch. Small bundles of muscular fibres, apparently independent, are to be found in the connective tissue of the external side of the tonsil which corresponds to the hilus. This side is also surrounded by fibres from the superior constrictor. Its outer aspect, moreover, is directed toward the internal pterygoid, from which it is separated by the above-mentioned muscular fibres by the bucco-pharyngeal fascia, and by a thin layer of fat. The relations of the tonsil to the internal carotid artery are not so intimate as commonly is supposed, for, between the lateral wall of the pharynx, the internal pterygoid, and the upper cervical vertebræ, there is a space filled with cellular tissue, the "pharyngo-maxillary interspace," in the posterior part of which are located the large vessels and nerves, and which lies almost directly backward from the pharyngo-palatine arch. The tonsil corresponds to the anterior part of this interspace, so that both carotids are behind it, the internal carotid 1.5 centimetres, the external carotid 2 centimetres distant from its lateral periphery. Hence, the danger of direct injury to the internal carotid in excision of the tonsil is infinitely small. An anomalous position or an aneurismal dilatation of

the artery of such a nature as to bring it within the range of the knife must be extremely rare. On the other hand, hemorrhage from section of the larger branches which enter the tonsil at its lower border may be so profuse as to require ligation of the main trunk. It is probable that many cases of supposed injury to the carotid have been of this nature.

In its minute anatomy the tonsil is for the most part like other so-called adenoid glands. In common with the rest of the oral cavity it is invested with a thick covering of pavement epithelium. Proceeding from without inward, the surface epithelium is scaly, each cell having a flattened, circular nucleus. Beneath this the cells and their nuclei become less flattened. Still lower are formed several layers of polyhedral cells which have spherical nuclei and are connected together by intercellular cement substance and are furnished with prickle cells. The whole rests upon a single layer of columnar epithelial cells with oval nuclei, and is furnished abundantly with simple papillæ. Under the epithelium is a delicate endothelioid basement membrane. Following this is a tolerably compact mucosa formed of interlacing bands of fibrous connective tissue and containing many connective-tissue corpuscles. In the normal adult tonsil this structure is so delicate that sometimes it is hardly recognizable. From it bands of connective tissue extend centrally into the larger tonsillary folds and the whole forms essentially both an enclosure and a framework for the adenoid tissue or proper substance of the gland, as well as a nidus for its vessels.

The adenoid tissue consists of a dense meshwork of fine, homogeneous fibrils which contains beside occasional endothelioid connective-tissue cells a large number of lymph corpuscles. These are small, round cells, each of which has a distinct spherical nucleus surrounded by a very thin covering of cell protoplasm. Near the cortex, the lymph-corpuscles are collected by means of delicate septa given off from the inner stratum of the capsule into a single row of oval masses called lymph-follicles. Throughout the rest of the gland the lymph-cells are diffused without any particu-

lar arrangement. Occasionally they extend so near the periphery as to penetrate the mucosa and encroach upon the epithelial layers. This is particularly the case in the interior of the crypts, where the epithelial layer is, as a rule, either wanting altogether or only to be found in occasional patches and in modified form. The tonsil is supplied abundantly with racemose mucous glands. The arteries which supply the tonsil are larger and more abundant toward its lower part. They accompany the connective-tissue sheath and its septa, give off a branch to each follicle, and divide into a network of capillaries which unite to form one or more veins.

A lymph-sinus, in open connection with a network of lymphatic vessels of the neighboring tissue, surrounds each follicle over more or less of its circumference.

The minute distribution of the nerves is not definitely known. Krause believes that they terminate now and then in the simple papillæ of the follicular cavities. Fibres from the sympathetic, undoubtedly, are supplied to the tonsil.

THROAT SYPHILIS AND TUBERCLE ACCORDING TO SALISBURY.*

By EPHRAIM CUTTER, M.D.,

BOSTON.

THE diagnosis of tubercle from syphilis has received much attention from laryngologists, and its literature shows ability. Still, there remains an uncertainty, and perhaps there is room for some evidence that bears in a new direction upon the question. It is now thirteen years since Dr. James H. Salisbury, of Cleveland, O., published in the *Am. Jour. Med. Sciences* a short article on "New Algoid Vegetations" found in the tissues of patients, which appear to him to be the specific cause of syphilis and gonorrhœa. A careful reader of this paper will not detect anything but a modest relation of what the author believed to be true, and the grounds on which this belief was based.

In 1873 the same was republished in the *Zeitschrift für Parasitenkunde*, Leipzig (Hallier's journal). In August, 1879, the writer published an article, on the morphology of syphilitic blood, in the *Am. Journal Dental Sciences*, Baltimore, Md. In this I corroborated Dr. Salisbury, and tried to show what "algoid" is, and what "fungi" are. I gave a list of the parasitic vegetations found in nature. This was drawn up by Prof. P. F. Reinsch, of Erlangen, Germany. I alluded to my studies verifying Dr. Salisbury, that had ranged over ten years in private practice, and in demonstrations at the following hospitals: 1, U. S. Naval, Brooklyn; 2, U. S.

* Read before the American Laryngological Association, Session 1880.

Naval, Chelsea; 3, State Alms-house, Tewksbury, Mass.; 4, Bellevue, New York; 5, City Hospital, Boston.

I desire now to testify that I think I have gained advantage by the use of this new physical sign in laryngology. I don't say I have made no mistakes, but I do affirm that I am firmly convinced I have, thanks to Dr. S., cured cases that otherwise I should not have cured. It is my desire that others should derive the same benefit. If my statements do not convince, I am sure that in time to come it cannot be said that I did not try to make the matter known. I am well aware of my position. So long as those who differ from me observe the laws of discussion, I respect them. I claim for Dr. Salisbury a fair hearing. He has continuously employed the new physical sign of syphilis and tubercle in a very large number of cases since his announcement, and his confidence has increased.

1. I propose here to briefly show how throat syphilis is distinguished from tubercle according to Salisbury.
2. What is syphilis on the Salisbury plan.
3. What is tubercle based on the Salisbury plan.
4. Differential diagnosis.
5. Mode of conducting the physical exploration.

First. Illustration by a practical case of the diagnosis of syphilis from tubercle;

More than ten years ago Dr. James F. Jarvis sent me a youngish man, with chronic aphonia and cough, for laryngological treatment. His skin was pale and waxy. Size, large. Form, symmetrical. Profession, overseer of a large blanket mill. Was able to attend to his business. On laryngological inspection, the throat was found peripherally thickened and reddened. The caliber of the pharynx, larynx, and trachea appeared materially diminished in diameter. The vocal bands true and false, arytenoids, intra-arytenoid band, and the anterior face of the epiglottis were involved. Pyriform sinuses not ulcerated. The disease was so general in its character that there seemed to be no special site to which to address topical applications. The question as to the nature of this infiltration came up. Believing it to be either syphilitic or tuberculous, I looked for the systemic lesions.

To anticipate, allow me to state that Salisbury regards tuberculosis (or perhaps more plainly, *consumption*) to be a constitutional, pathological condition, present sometimes during one year before organic pulmonal or other local disease. The evidence is found in the blood. On the other hand, he regards syphilis as a constitutional disease, preceded by a local lesion. Both may descend from parent to child. So that whether this patient had one or the other or both, the physical exploration of the blood would throw light on the diagnosis. I found no lung lesion. Thus the diagnosis was narrowed to the pretubercular state and syphilis.

Upon microscopic inspection, the morphology of syphilitic blood was palpably evident. What this is will be explained further on. This exploration, taken in connection with the rational and physical signs, decided the case for me. I had a delicacy, whether right or wrong, in direct query of the patient as to this sensitive subject. Subsequently of his own accord he admitted he had syphilis (indeed, I am so well satisfied with this blood evidence, according to Salisbury, that now I feel rarely called on to ask the question). On treatment with iodides and bin-iodides by the stomach, the inhaling of the nascent chloride of ammonium, with infrequent topical application of liquor ferri

FIG. 1.

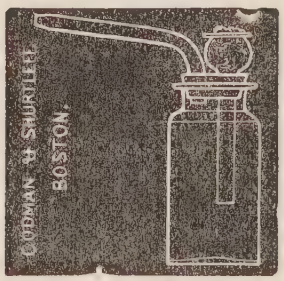

FIG. 2.

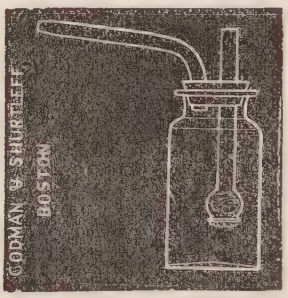

FIG. 1.—Nascent chloride of ammonium inhaler of the writer. *Active form.* Ammonia is placed on the sponge (previously damped with warm water) in the bulb of the straight tube. Acid chlorohydric (one drachm) is placed in the bottle. Inhale through the bent tube.

FIG. 2.—*Passive form.* Ditto for infants and persons unable to inhale from the tube. Air blown through the bent tube fills the apartment with the crystals which thereby are inhaled in ordinary respiration. See *Virginia Medical Monthly*, May, 1880.

persulphatis, and glycer. āā equal parts—to the infiltrated throat—the infiltration gradually subsided and the parts named regained their normal aspect. The voice was restored, and the patient has remained well up to the last time I saw him, en route for Leadville, Col., in July, 1879. Now, this diagnosis influenced the treatment. It seemed as if there was too much local lesion for topical

applications, and that the work must be done by systemic remedies. Please remember that this was ten years ago, and that it was a new thing to me to take such ground in a specialty where so much reliance was placed on topical medicine.

I am not prepared to say that no one could not have cured this case quicker, but when I remember its hopeless reputation and its happy restoration, I feel free to say that had I not known of the new physical sign, I believe I could not have so terminated the case.

For my purpose the relation of this case suffices. It illustrates how in suspected instances of syphilis or tubercle I am in the habit of always examining the blood, according to Salisbury, and on comparing the blood-evidence with the other objective and subjective symptoms, I make up my mind and treat accordingly. In one instance a valetudinarian who had enjoyed the benefit of the best medical advice in our specialty in the United States and Europe, whose case was obscure and difficult, had it relegated, thus, to syphilis, and the patient acknowledged it. By this it is seen that we regard throat syphilis and tubercle as only varieties of local lesion of general diseases.

Second. What is syphilis according to Salisbury? A diseased condition or state caused by a vegetation that is found in the sores—the secretions—the tissues diseased, and especially, secondarily, in the blood.

Syphilis first attacks the connective tissue at the point of inoculation, and next the lymphatic glands, after the primary sore or sores have healed. The specific cause may remain apparently dormant in the system for a period varying from a few days to months and even years; it then becomes evidenced by blotches and hard swellings in the periosteum—"Secondary;" thence it may spread its lesion to bone and cartilage—"Tertiary." The author asserts that his results have been arrived at by long continued, patient and careful labor, and that it is possible that he overestimates his results. He began to figure and describe every new body and circumstance in micrology in 1849. Eleven years he examined the pus from chancres and made no progress. The only thing he found foreign

were small copper-colored, minute globular bodies. But on dissecting out the bed of chancres, filaments running in all directions were soon discovered. Up to 1868 one hundred primary sores had uniformly showed this vegetation. He discovered this vegetation in the blood wherever the disease had become constitutional. On its presence or absence in the blood he has based a sure guide for treatment, judging from his practical experience. He says: "Under favorable states of the system the tendency seems to be for the vegetation to gradually lessen, and probably in some few instances it may eventually disappear entirely. It may be transmitted during the secondary and tertiary stages, under the proper conditions, without producing the primary disease. I have noticed many instances in which the father, having had the disease previous to marriage, and when the poison was not entirely eliminated, even though no outward manifestation of the disease had shown itself after marriage, this vegetation was transmitted to, and found in the blood of the wife and children many years after. In many cases of this kind this vegetation produces no visible impression upon the systems to which it is transferred, while upon others it produces more or less marked constitutional disturbance."

The following is a condensed description of the vegetation:

Genus crypta.—Minute, transparent, highly refractive, copper-colored algoid filaments, which develop in living tissues from spores.

Crypta syphilitica (Salisbury).—A homogeneous filament with extremities obtusely rounded. The filaments are of such uniform structure throughout that no trace of transverse markings is visible save in their early stage of development. Neither can the contents be distinguished from the outside wall. The filaments are either straight, coiled, or arranged in curves; develop from spores active or inactive in the connective tissue, and may be transplanted from one individual to another by inoculation or by contact with mucous membranes. They are believed to produce the disease named syphilis.

The changes in the tissues, glandular structures, mucous membranes, secretions, excretions, the growths and neuroses, are accounted for by the presence and results of the vegetation named. So that, save in cases where the primary sore or inoculation is in the throat itself (and Salisbury says he has known it to be inhaled by over-heated glass-blowers), the secondary symptoms arise from a systemic infection of the blood. Hence one may infer that when a suspected case of throat disease appears, we may reason that, if syphilitic, the blood, examined on the Salisbury plan, will show it. I testify that in my experience it does. The contagiousness of syphilis by contact is explained by the transplantation of the spores in the blood, mucous secretions, pus, and even the sweat of a syphilide, as in stokers, glass-blowers, etc.

The hereditary taint is explained by the transmission of the spores from the maternal blood, or through the mother by the father, either latent or active. Without controversy, all vegetation is latent unless the proper conditions of life are supplied. For example, Lister showed that urine kept in a retort with a long, narrow neck filled with cotton, did not develop the putrefactive vegetations. It is somewhat so with the blood vegetations. We see them held in abeyance. Perhaps it may be by the power of the resistance of the otherwise healthy body, and when this is impaired then the latent parasitic vegetation develops its work of disease. All ill-nourished plants and animals are liable to be subjects of disease. Mechanisms uncared for, or, to come to our own bodies, the most wonderful of all machines, if its nerve centres are interfered with, disorder may come from the want of power to enforce the police regulations of the body systemic; as in the body politic, riots ensue from the abolition of governmental restraint. Whether this be the explanation or not, the facts remain the same.

The organic lesions, such as lymphatic glandular enlargements, etc., may be explained by the interference with nutrition of the blood vegetation. It is a curious fact that the white corpuscles in the blood are the favorite *nidi*

of the vegetations. Salisbury, in his magnificent paper on the spleen,* points out the manufacture of the white corpuscles to be in the spleen and lymphatics; hence it is easy to see how the lymphatic glands may be diseased.

The way to remove the disease is to clear the blood of the abnormal form-elements that interfere with the nutrition of all tissues.

Those who deny that there can be any growths in the blood are referred to the dry-rot in timber, due to cryptogams. Timber is solid, while blood is liquid. Only till lately, have botanists generally described specimens that low magnifying powers reveal. Now it is well known that some of the cryptogams defy the highest powers of the microscope. We find fungi in rancid butter—an organic substance of greater density than the blood.

But grant the vegetations, it may be objected that they are harmless in the blood.

To illustrate, I will show a photograph of an alga found by Prof. Reinsch in a Key West sea-weed. It is innocent, he says. But for fear one may reason that all entophytic algæ are innocent, I can show the photographs and drawings of many such that make victims of their host. The muscadine kills the silkworm, the oidium the grape-vine, the botrytis the potato, and the achyla the fly. All these are cryptogams.

It is well known that people have been poisoned by eating mushrooms. From this we infer that some botanical specimens in the blood are innocent and some nocent. Indeed, this is the position Dr. Salisbury took in 1868. He describes a vegetation as sometimes found in apparently healthy blood, though, as a general thing, perfectly healthy blood is free from any evidence of vegetation. As the vegetation is removed from the blood of the syphilitic, so generally the cure progresses. We judge of the progress best from the blood.

The morphology of syphilitic blood, according to Salisbury, may be tabulated as follows:

1. Highly refractive spores of the crypta syphilitica.
2. Spore collects do.

* *American Journal of Medical Sciences*, April, 1866.

3. Mycelial filaments of the crypta syphilitica. These are copper-colored, large, often blunt at one end.

4. The spores and filaments are found in the bed of chancres.

Third. What is consumption, according to Salisbury?

1. It is a systemic disease primarily, usually present one year before the organic pulmonal lesion.

2. A condition or state induced by fermentative vegetation and the products of that fermentation.

3. The local disease is secondary.

4. Tubercle is regarded as an accident resulting from thrombosis of capillaries. The sphacelation and necrosis of the lung tissues, overloaded with the products of the fermentation, result, somewhat as *dry rot* destroys timber by breaking down its dense oaken structure by mechanical chemical and physiological interference.

5. The ferment belongs to the yeast family (for there are 40 kinds) and feeds on starch and sugar.

6. It is introduced ordinarily by defective alimentation. Yeast fermentation in the alimentary canal usually precedes the ingress of the yeast into the blood by this route.

7. The white blood corpuscles take up the spores of the vegetation, and they grow within, distending them by the entophytal growth.

8. The red corpuscles are changed in color, outline and adhesiveness. They lose their coating of neurine and become very adhesive and sticky. They curiously aggregate together on the slide in confused, irregular massing. They do not remain distinct, nor nummulate.

9. The spores are single, double, or in large collections (spore-collects).

10. Filaments are frequently found, which are connected with the yeast.

11. The fibrin filaments which ordinarily are minute and invisible, in consumption come to be large, strong and numerous, so as, when found, to cause the field to be filled with the interlacing network.

12. Sometimes thrombi are found, made up of white blood corpuscles or fibrin filaments or spore masses.

These dicta rest on observations made for over 22 years, and including thousands of animals. Before 1858 Dr. Salisbury fed 1,026 swine on fermenting food; of these 246 hogs died in the course of ten weeks. I have myself perused the records of 104 of the post-mortems of these 246 hogs. In all the autopsies the lungs showed pathological lesions that are usually called by the profession "consumption." Over 100 hogs that were fed on good sound corn were examined after slaughter and not a trace of tubercle was found.

Fourth. Differential diagnosis of tubercle from syphilis, according to Salisbury.

Perhaps I may now tell how it was that I diagnosticated the case alluded to. It was by noting

1. That the spores and spore collects were copper-colored.
2. That they were larger in size than the consumptive.
3. That the mycelial filaments were blunt and highly refractive (copper-colored).
4. That the white corpuscles were very much larger than those in the consumptive blood and contained copper-colored spores.
5. That there were no fibrin-filaments.
6. That the color, contour, consistency and behavior of the red corpuscles were different from those in the consumptive blood.

They were segregate, not nummulated, color good, outlines clear, not sticky.

Sometimes I have seen both consumption and syphilis together. The two could be seen combined, and the field was crowded with the abnormal appearances.

Under this head it should be remarked that Dr. Salisbury pointed out ("Blood Examinations," Moorehead, Bond & Co., N. Y., 1868) a morphology of the blood in ague, rheumatism, paresis, boils, carbuncles, typhoid variola, vaccinia. In the differential diagnosis the macroscopic and microscopic physical signs go together. The key-stone of an arch, taken alone, may be a key-stone, but its value is shown when it is in position and proper relation to the

other stones of the arch. So with the blood morphologies, they can't be separated from the objective and subjective evidence with which they are associated.

Fifth. How is the blood examined by the Salisbury plan?

Everything depends on the proper method. The aim is to obtain the blood almost exactly as it is in the vascular system. This requires expedition and cleanliness.

1. Things to be had: [A.]—The patient. [B.]—A lancet or scarificator. [C.]—A clean glass slide and a cover glass. [D.]—A positively good 1-5th-inch objective and two-inch eyepiece. [E.]—A good illuminator; a Perkins & House safety lamp is the best I know of.

2. Things to avoid: [A.]—Foreign substances, as dirt, etc., from the skin. [B.]—Too much blood. [C.]—Too little. The drop of blood should completely fill the space between the cover and slide and no more.

3. Place of selection for the purpose of drawing blood: fore-arm, above the wrist.

4. Time, patience, practice, expedition, careful observation are necessary.

5. The observer should first learn how to distinguish white corpuscles from the red, and should study the forms and peculiarities of vegetations that are found on the body and about the body.

6. A year of careful investigation will do more toward understanding this matter than any amount of writing or theorizing; that is, taking known syphilitics and examining their blood and chancres.

Without disparaging any other makers, I can say that the objectives of Tolles & Spencer answer for this work. Twelve or fifteen dollars will pay for them. This paper is not intended to be exhaustive; hence I refer to *Am. J. M. S.*, Phila., April, 1867. Also see "Morphology of Diseased Blood," *Southern Clinic*, Richmond, Va., March, 1879, page 208, for a list of 67 conditions, states and pathological products Dr. Salisbury enumerates as to be looked for in the blood of disease. Also see Salisbury's "Microscopic Examinations of Blood and the Vegetation found in Variole, Vaccinia, and Typhoid Fever," Moorehead, Bond & Co., N. Y., 1868.

I am very well aware of the history of this contribution. It has been received with a total denial by some, while others have verified the observations and found them of great practical value. Among the latter I came.

Lorstofer made some announcements about a syphilitic corpuscle found in the blood. But this was subsequent to 1868. His theory was not accepted. In my opinion he only had half the truth. Other diseases have enlarged white corpuscles. Salisbury pointed this out before he gave the name of Zymotosis Regularis to a vegetation he discovered in healthy blood ("Microscopic Examinations of Blood," Moorehead, Bond & Co., N. Y., page 32). Lorstofer's method was open to the objection that the blood was to be kept some time and a vegetation developed therefrom. Salisbury's method depends on getting the blood from the capillaries as soon as possible, since the spores are perishable. Lorstofer does not allude to the copper color of the spores, these being found inside of the white corpuscles, nor to the filaments in the blood and peripheral margins of chancres; nor to the copper-colored spores in the pus; nor to the differential diagnosis from other diseases. Lorstofer was correct in the fact that the white corpuscles are enlarged in syphilis, but he should have insisted upon the copper-colored spores contained within as a distinctive mark. The difficulty is that he did not take in the full scope of the biology of the vegetation. He deserves credit for the work he did, and for opening up the field in the manner he did, though partially done.

I desire to call particular attention to what Dr. Salisbury says in the paper of 1868:

"It is possible that I overestimated what I have found, but I believe them to produce the disease called syphilis."

The following illustrations were exhibited:

1. Spores and spore collects; in the original they were copper-colored. 2. Do. with some fat globules from the areolar tissue of the skin. 3. Four white corpuscles, enormous in size; distended with entophytal growths, called the syphilitic vegetation. 4. 1-50th-inch objective; white

corpuscle with marked entophytal growths; spores and red corpuscles. 5. 1-75th-inch objective; white corpuscle with inside growths, one spore very much enlarged. 6. Same objective, white corpuscle in which are several spores that were copper-colored in the original. 7 and 8. Two enlarged and over-distended white corpuscles with peculiar phases that cannot well be described. 9. 1-50th, white corpuscle which Prof. Reinsch declared morphologically identical with an entophyte he had discovered in algæ and described in a work published in Germany. Later he wrote: "I see, as botanist, in this diseased blood nothing but a peculiar case of entocellular vegetable parasitism." Prof. Reinsch is the leading algologist in the world. His utterances sustain Dr. Salisbury. 10. Innocent parasitic alga, from Key West sea-weed—Reinsch. 11. Algoid filament in syphilitic blood. 12. Another. 13. For comparison, spores of the pretubercular state usually present one year before the organic lung disease; not copper-colored in the original. 14. Mycelial filament; consumptive blood. 15. 1-75th-inch objective. Three white corpuscles distended and enlarged by entophytal growths. These were introduced to show that there are other complaints in which there are spores—filaments and enlarged corpuscles. 16. Fibrin filaments; consumption. 17. Do. 1-50-inch objective. 18. Consumptive blood, showing the arrangement of the red corpuscles—the enlarged white corpuscles.

(For discussion see p. 379.)

ERYSIPELAS OF THE LARYNX.*

By WM. PORTER, A.M., M.D.,

ST. LOUIS.

FORTUNATELY, cases of erysipelas of the larynx are rare. Until the advent of the laryngoscope it was scarcely thought of, except as a metastasis by the older writers, and as extension of external disease by more modern investigation. Believed in, but not proven by the ancients, a sufficient number of cases was collated,—18 by Cornil in 1862, and some 6 others by Schlumberger in 1872, to show the existence of erysipelas in the respiratory passages. More recently, Straus, of the Hôpital Tenon, reports an interesting case to which the designation of erysipelatous pneumonia is most apt. In this case, as in the few others recorded, erysipelas of some part of the surface of the body preceded the appearance of the disease in the respiratory tract.

Except one herein given, I am not aware of a single case of laryngeal erysipelas of which the record is that there was no primary affection of the skin and pharynx. I offer these two cases in illustration of the position that erysipelas may occur as a primary disease in the larynx.

The first case was under the writer's care at the London Hospital in 1874. An extract of the history is given by Mackenzie, in his recent work upon "Diseases of the Pharynx, Larynx and Trachea."

J. S., a dock laborer, æt. 35, admitted an in-patient of the Lon-

* Read before the Laryngological Association, Session 1880.

don Hospital, January 19, 1874, for a simple fracture of the right internal malleolus. Patient is a strong, well-developed man of nervous temperament, and with the exception of a slight cough now and then during the winter, he had always been in good health. He did well for the first ten days after admission; then he complained of a little pain in his throat, and he had some hoarseness. The second morning he had slight dyspnœa, the pain was more severe and the hoarseness more marked. His temperature was 102° F., pulse 132 and respiration 36. An aperient was ordered, quinine in full doses given, and benzoin vapor inhaled. The next morning, the third from the first laryngeal symptom, I saw him for the first time and he was transferred to a ward in my service. He was then aphonic, with difficult breathing and intense pain. The epiglottis and arytenoid cartilages were acutely inflamed, and the ventricular bands swollen and covering the vocal cords, which as far as could be seen were injected. The pharynx and soft palate were but little implicated. Astringent applications were made, warm fomentations directed, and the inhalations persevered with.

On the fourth day he was seen by Dr. Mackenzie. There was then swelling of the epiglottis, the mucous membrane of which seemed thickened and eroded, and there was marked infiltration on the outside of the larynx. During the evening the patient became rapidly worse; pulse 160; respiration 40, and difficult; temperature 103° F. By midnight the dyspnœa was so great that surgical interference was deemed necessary.

I opened the larynx and introduced a tube of large size. There was considerable hemorrhage which seemed to relieve the difficulty of breathing, even before the larynx was opened. His pulse became more quiet, and a hypodermic injection of morphia being given, he went to sleep. Next morning he seemed better, but complained of a pain in the cardiac region. In the afternoon a dark flush was noticed around the wound, his breathing was more labored, there was increase of dysphagia, a distinct friction sound at heart's apex, and dulness at base of each lung. The second morning after the operation, these symptoms had increased; the discoloration around the tube was more marked, and there was œdema and pitting on pressure.

Patient died at 10 P.M., six days from the first. Autopsy next day. The larynx gave evidence of acute change; the

mucous membrane covering the epiglottis and arytenoid cartilages was swollen and ulcerated; while throughout the whole extent of the larynx and trachea, extending far down the bronchi, the mucous membrane was of a bright red color. On the outer side of the larynx, there were several small abscesses and great infiltration. These abscesses did not communicate either with the interior of the larynx or with the surface of the neck; the lungs in their whole extent were dark and œdematous, a sero-purulent liquid exuding freely when section was made. There was no evidence of old disease, and the pleura was healthy; the heart, in structure was normal, right ventricle full of blood and the left contracted. There was a little straw-colored fluid in the pericardium and much effused lymph. Brain, kidneys, liver, spleen, stomach and intestines healthy. There was nothing unfavorable about the site of fracture.

The diagnosis of erysipelas of the larynx was entertained because of the symptoms mentioned,—the acute and rapid inflammation, the œdema and excoriation, the temperature and pulse, the thickening around the larynx, the spreading of the red blush around the wound after laryngotomy, and the fact that there were a number of cases of erysipelas in the hospital and one at least in the adjoining ward. The patient had no shivering, but this does not seem to be a very constant symptom in such cases as are recorded.

It is a matter of interest, that a patient lying near this case with an open wound of the thigh, was seized with well-marked erysipelas around the wound the day that S. died; also that the mother and sister of the patient, the nurse of the ward, and two of the medical attendants (Mr. Withers, the house-surgeon, and myself) were attacked with laryngitis, more or less acute, during the time the patient was under treatment. All yielded promptly, none being very severe.

For the notes of the second case I am indebted to Dr. J. J. Miller, of Rinkleville, Mo., whose diagnosis of erysipelatous pharyngitis with pulmonary œdema is fully sustained by the facts.

"I was called about 5 P.M. on Saturday, February 21, 1880, to see J. H. M. S., aged 26 years, a native of Missouri, by occupation a merchant.

"I ascertained the following facts in regard to his case: He was on the verge of bankruptcy, and was very much perturbed thereby. On Friday, one week previous (see Watson as to period of incubation of erysipelas), he travelled a distance of fifteen or twenty miles in an open buggy (the atmosphere being very raw and chilly) to see his sister, who was reported dying from erysipelas, and remained that day and night with her. I found him complaining of sore throat; he had high fever, full and frequent pulse—did not take his temperature—heavily yellowish-furred tongue, slight nausea, and constipated bowels. Upon examining the throat, I found a slight but diffused redness of palate, fauces and tonsils: deglutition painful.

"More from the history of the case and the general symptoms than from the appearance of the throat, I diagnosed erysipelatous sore throat. I ordered for him an emeto-cathartic of calomel and ipecac., which acted promptly; I then gave him five grains of quiniæ sulphatis with fifteen drops of tincture ferri muriatis, to be repeated every third hour, and had him use a gargle every hour or two of a ten-grain solution of carbolic acid.

"I visited him the next morning at seven o'clock, and found that he had spent a restless night, and that during the night his respiration had become wheezing and stridulous; temperature 113°, and deglutition very difficult.

"I made a laryngoscopic examination, and found commencing œdema of mucous membrane, covering supra-arytenoid and cuneiform cartilages, and diffuse scarlet redness extending to all of the surrounding parts. Continued the iron and quinine, and ordered a spray for the throat of a solution of alum and tannic acid. Saw the patient again at 11 A.M. Condition unchanged except for the worse. Upon examining the throat, found a livid redness and œdema extending to all the soft parts of the throat, and the muscles of deglutition were paralyzed, so that either food or medicine was regurgitated by both nose and mouth. I scarified the swollen parts, and encouraged bleeding by the use of steam and warm-water gargle; then applied a solution of argenti nitratis (℥ i ad ℥ i).

"Recognizing the fact that there was hope in no remedy save tracheotomy, I requested Drs. T. H. Bond and Wm. Porter (of

St. Louis) to see the case with me. They met me about 3 P.M., and concurred with me as to the necessity for the operation. The family would not consent, however, until the opinion of another physician (friend of the family) could be obtained, which delayed the operation until 7 P.M., when it was performed by Dr. William Porter, Dr. Bond and myself assisting. It is but just to state that there were already symptoms of pulmonary œdema. The patient lived till 7 A.M. February 23d, and then expired."

Remarks.—In regard to the operation performed, Prof. Cohen says: "In presence of asphyxia or excessive dyspnœa, tracheotomy is recommended by Ryland, Moss and Gibbs; but it is unhesitatingly condemned by Porter, of Dublin, and my own researches into literature have not discovered a single record of life rescued by its agency. Be it even so! I would recommend tracheotomy, nevertheless, if not for the *one chance more* it offers to life, at least for the relief it affords the patient. In this case the operation changed the condition of the patient from one of restless, gasping agony to that of tranquil repose, and gave him a few peaceful hours in which to make preparation to meet his God."

Fully agreeing with Dr. Miller in his conclusions, I would also call attention to the many points of similarity between these two cases, and between them and those recorded cases in which there was previous or coincident erysipelas of the surface of the body. The highest authorities insist that the diagnosis of erysipelas of the respiratory tract is always doubtful, except when accompanied by external disease; but from the possibility of infection, the progression of the symptoms, the local appearance, the development of pulmonary œdema—determined by physical examination in both, and confirmed by *post-mortem* in one—I believe that in these cases there was no error in defining the disease.

TRANSACTIONS OF SOCIETIES.

TRANSACTIONS

OF THE

SECOND ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE CITY OF NEW YORK, MAY 31, AND JUNE 1 AND 2, 1880.

Monday, May 31st, morning session.

The AMERICAN LARYNGOLOGICAL ASSOCIATION convened at Delmonico's, parlor No. 10, New York City, May 31, 1880, and was called to order at 11 A. M., by the Secretary, Dr. George M. Lefferts, of New York.

The following Fellows of the Association were present :

Dr. J. SOLIS-COHEN, Philadelphia.
Dr. GEO. M. LEFFERTS, New York.
Dr. F. I. KNIGHT, Boston.
Dr. E. L. SHURLY, Detroit.
Dr. J. H. HARTMANN, Baltimore.
Dr. W. C. GLASGOW, St. Louis.
Dr. ANDREW H. SMITH, New York,
Dr. EPHRAIM CUTTER, Boston.
Dr. F. H. BOSWORTH, New York.
Dr. R. P. LINCOLN, New York.
Dr. J. O. ROE, Rochester.
Dr. BEVERLY ROBINSON, New York.
Dr. CARL SEILER, Philadelphia.
Dr. MORRIS J. ASCH, New York.
Dr. THOS. F. RUMBOLD, St. Louis.
Dr. T. R. FRENCH, Brooklyn.

The following guests of the Association were present :

Dr. W. GLEITSMANN, Ashville, N. C.
Dr. W. H. DALY, Pittsburg.
Dr. S. W. LANGMAID, Boston.
Dr. ERNEST W. CUSHING, Boston.
Dr. EUGENE BOISE, Grand Rapids.
Dr. WILLIAM C. JARVIS, New York.
Dr. URBAN G. HITCHCOCK, N. Y.
Dr. C. W. HICKMAN, Augusta, Ga.

Dr. D. N. Rankin, Alleghany, Pa.
Dr. M. Mattson, New York.
Dr. George W. Major, Montreal.
Dr. Harrison Allen, Philadelphia.
Dr. Herman Mynter, Buffalo, N.Y.
Dr. H. B. Farnham, New York.
Dr. D. Bryson Delavan, N. Y.
Dr. C. E. Bean, Louisville, Ky.
Dr. R. C. Brandeis, New York.
Dr. C. H. Chapman, New Haven.

The President of the Association, Dr. Elsberg, of New York, and the Vice-President, Dr. Davis, of Chicago, being absent, upon motion of Dr. Knight, Dr. J. Solis Cohen, of Philadelphia, was elected Chairman, *pro tem.*

Dr. Cohen took the chair, and, after thanking the gentlemen present for the honor conferred, promised to preside, to the best of his ability, with impartiality and justice.

The following address of welcome was then read by the Secretary.

In the name and as the exponent of all my colleagues residing in this city, the fulfilment of a very pleasant duty has been assigned to me to bid you all a most cordial and hearty welcome to this, our Second Annual Convention ; to extend to you the hospitality of our homes, and, as far as lies in our individual powers, that of our city ; to express, finally, if my words can do it, our pleasure at seeing so many familiar faces and old friends gathered here to-day.

I extend to you, then, Fellows of the American Laryngological Association, a hearty welcome. We, of New York, are glad, after the interval of a year, quickly passed, without a single loss in our ranks, to meet and greet you here again, to extend the hand of fellowship, to have the opportunity granted us of renewing our old friendships and of forming new, and finally of striving with you in professional zeal to advance the objects and increase the influence of our young Association.

We have good cause for self-congratulation, I think, when we look back upon the good and practical results achieved during the first year alone of our Association's existence. The amount and character of our work speaks for itself. Shall it not stimulate us to increased effort ? We cannot fail to appreciate the fact that the meeting upon which we are about to enter, must be of value to us. We know that it is a gathering from far and wide of earnest, devoted workers in the specialty. May we not anticipate that it will be replete with matters of scientific interest, and that it will finally achieve results that will aid in promoting these highest aims of our profession,—the advancement of science and the good of humanity.

The branch of surgery which we represent, has, you will acknowledge, made great strides toward perfection in our country, within the past few years; the very existence of this Association, stands as a proof of the fact. We are, to-day, second to none, in the reputation of our representative men, in the variety and value of our contributions to its literature; in our number of teachers of the art; and in our wide-spread distribution of working specialists. The importance of laryngology and of the use of the laryngoscope is now universally recognized and its good results appreciated.

If the profession at large thus value our work and recognize the workers, if they look to us for the cultivation of this special field, it certainly behooves us not to offer them any immature harvest, but rather to endeavor to present to them, with a good will, the ripe results of our gleaning, to offer our experience, the outcome of our earnest labor in the special domain of laryngology.

May I then express the wish and hope which will be reëchoed by all, that our work, our discussions, and our interchange of views, may be conducted in that proper spirit of scientific interest, which shall assuredly bring forth a rich, ripe and valuable crop, one alike of practical worth to us, as well as to our colleagues in the profession at large.

Let me again, gentlemen, cordially welcome you. Let me hope that your visit to us, short as it is, will carry pleasant associations, that our friendships may be both extended and strengthened, that our scientific lore may be increased by mutual professional intercourse, and, finally, rest assured that when you leave us—our mutual work well done—you bear with you, our best wishes for your prosperity and well-being, until time again calls us together.

The President's address—which had been forwarded from Aix-la-Chapelle—was then read by the Chairman, Dr. J. Solis Cohen, as follows:

LARYNGOLOGICAL INSTRUCTION.

Address to the Fellows of the American Laryngological Association, at their Second Annual Meeting, New York, June, 1880, by Louis Elsberg, President of the Association.

GENTLEMEN—Twice I have already presided over your deliberations, but I am compelled to resign from the post of honor to which your kind partiality has called me, without fulfilling its

duties during your present session. Some of you may remember that I complained last year of being ill. With a few intermissions, I have suffered ever since. In the endeavor to regain health I have gone to the ancient springs of Aix-la-Chapelle. I regret exceedingly that I cannot be with you in person at this time, and I send you, together with this address, from across the ocean, thousands of miles away, and from a sick-bed, hearty, kindliest, friendly greetings.

The most important event relating to our specialty that has occurred since last we met, is the establishment of the journal devoted to laryngology, with the first number of which you all are, no doubt, acquainted. The idea of such a publication had been a favorite one with me for many years; the coöperation which I have been so fortunate as to obtain, assures its success, and the American Laryngological Association has in the ARCHIVES OF LARYNGOLOGY an organ of its own. Whether, in the near or distant future, it would or would not be better for the cause and all concerned that the proprietorship should be vested in a permanent organization like our Association, instead of in a private hand, which it is at present, is a subject which I commend to your consideration. At all events, I assure you that it has been established, and will be carried on, not so much for personal ends as for our common good.

As the special theme of this address, I have chosen the subject of laryngological instruction. Last year I gave you an account of the lectures and clinics in the different medical colleges. The sources of information being at present inaccessible to me, I know not whether that account is as accurate at this date as it was then. Two additional colleges have, during the past year, appointed teachers of laryngology, viz.: the medical school of Yale College, and the medical department of the University of Vermont, but of the details of the instruction given by them I am uninformed.

In presenting for your consideration what the instruction in laryngology or the throat-specialty at a medical college should be, I begin with the fundamental proposition that *it must include everything that should be known and performed by a general practitioner, but may exclude all extra knowledge or skill of a specialist.* It must be systematic, clear and thorough, and both didactic and clinical. It must form a part of the regular course of medical instruction of the college, coördinate with the most favored other specialty taught, as none is of greater importance to the general practitioner.

1. Before having throat patients brought before them, students must be taught what the term laryngology is now used to designate, the extent of the domain of the specialty, and the connection between throat affections and other diseases.

2. Secondly, they must study laryngo-morphology, embracing, *par excellence*, the anatomy and topography of the larynx, and in conjunction therewith those of the other constituent organs and structures of the throat. Object teaching by dissections and models, drawings, and mnemonic devices should be made use of to the largest possible extent, without wearying the students. Anatomical names that fix in the mind the position or shape and, if possible, the function of individual parts, should be agreed upon by this Association, and then employed in teaching ; for example, instead of "Santorini's cartilage" the names "supra-arytenoid" and "buffer" cartilage, are suggested ; instead of "Wrisberg's," the names "cuneiform" and "prop" cartilage ; for the intrinsic laryngeal muscles, anterior, interior, transverse, lateral, and posterior ; corresponding names for the nerves ; etc.

3. Immediately after the structure, the functions of the various parts of the throat should be taken up ; first, the physiological action of each constituent ; afterward, in connection, their combined actions in the performance of the functions of swallowing, breathing, and the production of the voice, and the many modifications of these functions.

These three divisions of the subject are to a certain extent introductory to the next three, which pertain to throat diseases, viz.: the pathology, the means of diagnosis, and the means of treatment, and which, though still systematically didactic, should be illustrated by living patients as well as by specimens and models, *i.e.*, should be clinical as well as didactic.

4. In teaching laryngo-pathology (including by this term the pathology not only of the larynx, but also of the other portions of the domain of laryngology) the general principles and systemic relations must not be lost sight of, the knowledge and application of which mark the difference between the practitioner of liberal education and the one-sided routinist, who does not deserve the name of either physician or laryngologist.

5. Among the means of diagnosis, laryngoscopy, with its kindred methods of inspection, must be thoroughly taught, but students must be warned that laryngoscopy, although our chief, and frequently, in an individual case, our only reliance, is not to usurp

the place of other means at our command ; as indeed, in many a case it is inapplicable, and in many another can only supplement the application of other methods and the interpretation of other signs and symptoms than those of mirror-sight. In all departments of medicine, the time is past when the physician had only to listen to the history of the complainings of a patient, and make a shrewd guess at the real disease, assisted, perhaps, by nothing objective except the tongue and pulse or the appearance of the urine : but in no other class of diseases, not even those of the eye and skin, has objectiveness of investigation made as much progress and attained as much success as in those of the throat. And it cannot be too much impressed upon the student of laryngoscopy, that not the sense of sight alone, and that indirectly, but all our senses, both directly and indirectly, with the exception of the sense of taste, must be used, and, if properly educated, are capable at the present day of assisting in the recognition of some affection or other included in the domain of laryngology. Objective signs outweigh sensations of the patient and intuitions of the physician, nevertheless subjective symptoms must not be entirely neglected, but be carefully collated in the logical consideration of the case before the laryngologist. Frequently, in an obscure case, in addition to all special knowledge, the general medical information and experience of an educated practitioner alone enable one to arrive at a correct diagnosis.

I do not, of course mean to say that a student during the short time of college attendance, into which, necessarily, so much is crowded, can be taught what can really be acquired only by experience and post-graduate study ; but what he can and ought to be taught, is the proper spirit and technical dexterity of method ; he must learn how to use the instruments, and how to observe, investigate, and reason. Professor Ziemssen's proposition,* that courses on laryngoscopy and laryngological technics, as well as other methods of diagnostic and therapeutical procedures, should precede attendance on general clinical instruction, is based on the correct appreciation of the fact that unless the student is already in possession of the technical ability required, the mere looking on the performances, and listening to the words, of the best clinical teacher is comparatively valueless for his own doings in medical practice.

* " Ueber den Klinischen Unterricht in Deutschland," *Deutsches Archiv für Klinische Med.*, vol. xiii, 1874, p. 1, etc. ; also " Ueber die Aufgaben des Klinischen Unterrichts und der Klinischen Institute," *Rede gehalten in München.* 8 Juni, 1878. Leipzig, F. C. W. Vogel, 1878.

6. What I have already said makes it unnecessary to dilate at length upon the extent and limits of the college instruction of laryngo-therapeutics. Therapy is the one, always-to-be-remembered aim, the *raison d'etre*, of the physician. All scientific medicine, no matter how apparently unrelated to practical demand, must contribute, in the end, to the cure and alleviation of disease and suffering. The treatment of throat diseases by the educated practitioner is at the present day a very grateful task, and although it is impossible that every student at college should acquire, while there, the practical skill necessary for the difficult surgical operations which the specialist performs, yet he should learn to know what can be done, and learn also by personal practicings how to make a diagnosis and what are the indications for treatment. I think he should also be taught to carry out, not only the hygienic and general treatment, but also the application of local remedies, except the most difficult operations.

In this sketch I have spoken only of human laryngology, and it may be thought by many that in none except veterinary colleges is there any need of teaching comparative laryngology ; but the truth is that only by the light of comparative science can anthropology be thoroughly understood. The method of the natural sciences which, fortunately for the progress of medicine, is now introduced into the investigation of all its branches, includes comparative studies of organisms and embryology, or, rather, the science of development ; and, from experience of the good results obtained, I advise every instructor of laryngology not to fail to illustrate and enforce his teachings by appropriate references to the animal kingdom.

And now, gentlemen, Fellows of the American Laryngological Association, dear friends all, I am about to perform the last duty of an expiring presidential term, which is, to leave you a legacy, in default of more substantial aids to the attainment of the objects of our association, of sincere good wishes. When first taking the chair, two years ago, I said : " My wishes for the success and welfare of the American Laryngological Association are such as to make me hope that, though I do the best in my power, I shall be the worst president the association will ever have." The hope then expressed I reiterate now. May your meeting be in every way a pleasant, harmonious and successful one. May the papers presented and the discussions they evoke promote our special science and art for the healing of all sufferers.

The address was listened to with manifest interest by the members of the association, and was received with repeated marks of approval.

Upon motion of Dr. Knight, the chairman was instructed to communicate to Dr. Elsberg the sympathy of the association with him in his illness, and its interest in his speedy recovery.

Dr. Lefferts moved that the ideas embodied in the president's address in reference to methods of teaching be referred to the same committee to whom the president's address was referred last year.

Carried. This committee consists of Drs. Cohen, Knight, Cutter, Hartman and Asch.

The first paper in order was that of Dr. Ephraim Cutter, entitled, "Throat Syphilis and Tubercle, According to Salisbury." (See page 342.)

Remarks on Dr. Cutter's Paper.

Dr. Carl Seiler, of Philadelphia, enquired as to the size of the spores, both in syphilis and tuberculosis, as well as to the size of the filaments developed from these spores. He also wished to be informed as to the cleaning mode of the glass slides, and as to how illumination was effected.

Dr. Cutter replied that he had not made accurate measurements, for he did not consider it necessary; all that was necessary for the differential diagnosis between syphilis and tuberculosis, was to be familiar with the appearance of the spores in the two diseases.

Dr. Seiler said that the reason he had asked these questions, was that *size* in microscopical investigations was of diagnostic importance. We could not judge accurately by the eye-sight of the size of an object; we could, of course, with considerable practice, say that the object was about so-and-so large. He asked in regard to the cleaning of the slides, because he knew how difficult it was to get rid of the extraneous dirt upon them, and unless this was gotten rid of, it would interfere with the microscopical examination; simple rubbing of the glass would not remove it. Then, again, he wanted to know whether every error of refraction had been done away with, that was to say, whether the sub-stage condenser had been used.

Dr. Cutter remarked that he was accustomed to use his handkerchief for the cleaning of the glasses. He usually carried his

microscope in his pocket, in order to make examinations at the bedside. What he wished to call special attention to, was the distinctive microscopical features of the disorder under consideration.

There being no further discussion, Dr. E. L. Shurly, of Detroit, next read a paper upon, "The Treatment of Pharyngitis Sicca." (See page 228, ARCHIVES OF LARYNGOLOGY, vol. i, No. III.)

Remarks upon Dr. Shurly's Paper.

Dr. FRANK H. BOSWORTH, of New York, remarked that he regarded the occurrence of the disease rare. With reference to its etiology, it was the common impression that it was the last stage of naso-pharyngeal catarrh. Pharyngitis sicca, however, was a dry catarrh from the start. That the disease was due largely to occupation, he thought indisputable. He had noticed it in young women who had been confined in tobacco factories only a short time. It was especially frequent among cigarette makers; he had also seen it in carpenters. He did not think he had been able to notice that it was dependent upon disturbances of the general health, or of the stomach. But he thought he had noticed that a catarrh characterized by excessive secretion might depend upon disorder of the stomach. In regard to treatment, he had had no experience with galvanism. He had been well satisfied with the use of drugs, especially with powdered bloodroot, and what was called the "Indian Catarrh Remedy." The surface should be cleansed and stimulating applications made to it until there was established a functional activity of the mucous membrane which would persist.

Dr. CUTTER stated that the disease seemed to him to be dependent upon impaired nutrition. He looked upon the human body as a machine, run by fuel, and if proper fuel was not supplied, you could not expect to have the machinery run.

Dr. SHURLY remarked, that his experience in Michigan in regard to gastric diseases in this affection differed somewhat from Dr. Bosworth's. He found that most of the cases were accompanied by one form or other of dyspepsia. The health was not usually very much run down. He agreed with Dr. Bosworth that pharyngitis sicca was not always the last stage of pharyngeal catarrh.

A paper on "Erysipelas of the Larynx," by Dr. William Porter, of St. Louis, was then read by title. (See page 354.)

The Chairman appointed for Nominating Committee, Drs. Knight, Robinson and Shurly; and for Auditing Committee, Drs. Hartmann, Roe and Seiler, after which the association adjourned.

May 31st. Afternoon Session.

The association was called to order by the Chairman, Dr. J. Solis Cohen, at 3:30 P.M,

Dr. GEORGE M. LEFFERTS, of New York, read the first paper, entitled, "Some Practical Suggestions in connection with the use of the Laryngoscope in Children." (See page 232, ARCHIVES OF LARYNGOLOGY, vol. i, No. III.)

Remarks upon Dr. Lefferts' Paper.

Dr. COHEN believed, in the majority of cases in which he had seen the larynx in very young children, that it had been the result of a happy accident rather than of skill. He usually attempted the examination with the child upon its mother's lap, or that of the nurse, but very rarely obtained a view of the larynx of a very young child for diagnostic purposes. If there was a great deal of resistance upon the part of the child, he had usually been forced to abandon the examination; he certainly had not attained to the success related by the author of the paper.

Dr. CUTTER remarked that in the early part of his laryngeal practice, he was called to make a laryngeal examination in a child two-and-one-half years of age. After repeated trials for a fortnight, he succeeded in diagnosticating a laryngeal growth, but in order to accomplish this, he was obliged to resort to the use of an anæsthetic; with this aid he experienced no further trouble. Another case occurred in his practice twelve or fifteen years ago, in which he resorted to anæsthesia. When the child was fully under the influence of the anæsthetic, he drew out its tongue and wiped away the mucus from the buccal cavity, and then was able to determine the existence of a large growth, completely filling the larynx on both sides. This was removed by laryngotomy. He had never resorted to coercion. He agreed with the author of the paper, that there was a large field in this direction for original work. He had had no experience in percussion or auscultation of the larynx.

Dr. HERMAN MYNTER, of Buffalo, New York, remarked that he

had had some experience in the examination of the larynx in very young children within the past year. The result of his first attempt was an ignominious failure. The child had swallowed a kernel of corn. No examination of the larynx was possible. Tracheotomy was performed and the corn was taken out; the child recovered. Another case had come under his notice about eight days ago. A little child four years of age, had been sick eight or ten months; she had been getting worse and coughed all the time; she was emaciated and cachectic. In this case the examination was very successful, and showed that there was no constriction of the larynx. Ulceration with enlargement of the arytenoid cartilage was revealed as well as ulceration of the vocal cords. By means of mild remedies the condition of the patient was greatly improved.

Dr. LINCOLN thought the position of the child important. It had been his custom to wrap the child in a towel, or to have his limbs held by an assistant, while the operator's knees embraced the child's head, as this gave the physician a better chance to make his examination. In such a position, using diffused light from the window, one could readily cleanse the parts, and the examination could more readily be made than by any other means he had tried.

Dr. ANDREW H. SMITH remarked that it had been his fortune in several instances to be able to make an examination of the larynx in quite young children with considerable satisfaction. Within a short time he had examined the larynx of a child seven years of age, satisfactorily. Some years ago he had examined a child, four years of age, with perfect facility. He had in one case been able to inspect the parts below the cords, but that was after long training. He remembered seeing Dr. Mackenzie get a view of a laryngeal growth in a child and remove it at the first sitting.

Dr. KNIGHT expressed the opinion that children had too often been looked upon as impracticable subjects for laryngoscopical examinations. On one occasion, in a child three or four years of age, he had succeeded in differentiating paralysis of the posterior crico-arytenoid from spasm of the glottis, and recommended tracheotomy, and the diagnosis was subsequently shown to be correct, as the muscles remained paralyzed. On this occasion everything had to be done by force. Since that time he had been successful in a forced examination of the larynx in young children in quite a number of instances.

Dr. Bosworth stated that he had examined a great many children from five to ten years of age. He had found that the great difficulty was the control of the child. He had always felt that if he could get the child to do what he wished he could obtain a satisfactory view of the larynx. The lack of reflex action in the child's throat he had not found to constitute a difficulty. Just how to account for this lack of irritability in the child's throat he was unable to say, unless it was due to the absence of chronic follicular catarrh, so commonly found in adults.

Dr. Rumbold remarked that one of the most important things was to examine the child with as little force as possible. He had never wrapped a child in his life. He did not often care to look into the larynx of the child. All that was usually necessary was to observe the condition of the pharynx, for he believed that laryngitis did not exist in children without pharyngitis. He gave the child a tongue-depressor, and when it was possible had it depress its own tongue. By getting the spray behind the soft palate the laryngeal symptoms could be relieved. He believed that in the majority of cases the inflammation began in the pharyngeal and nasal cavities.

Dr. Lefferts remarked that the discussion certainly seemed to prove that laryngeal examinations were possible in children, and that the results of such examinations were often of great diagnostic value he could not doubt, and hoped that his paper would serve as a means of stimulating observation in the proper direction. He knew that children could be examined oftener than they had been, and he believed that if they were, our knowledge of their laryngeal pathology would be enlarged ; it was certainly susceptible of great improvement in many points. He had not been able to sponge out the pharynx and get rid of the accumulating mucus as rapidly as the remarks of one of the gentlemen would lead us to believe was possible. He recalled to the recollection of his hearers the advice given in his paper not to withdraw the mirror as long as the mucus did not soil it, but to wait for a deep and sudden inspiration, when the mucus would often clear away, pass into the pyriform sinus, and the larynx open and permit of a view into the interior. He had not entered into the pathology of laryngeal diseases in children in his paper for want of time and space. In illustration of the importance of a laryngoscopic examination in children, he recalled to mind three cases in which he had been lately called to perform tracheotomy for so-called croup, and in

not one of them did he find croup; one died; two got well, without the operation. The majority of gentlemen say that it is impossible to laryngoscope a child; but he would ask these gentlemen to make a trial, and he felt confident that they would often obtain diagnostic evidences thereby. We could not examine all children, but a certain proportion could be. Dr. Lincoln's method was simply reversing matters, and it seemed to him that the old plan of wrapping a child would lead to better results as a rule.

There being no further discussion, Dr. Beverley Robinson, of New York, proceeded to read his paper upon "Suggestions as to the Therapeutical Value of Rest in the Treatment of Laryngeal Diseases." (See page 243, ARCHIVES OF LARYNGOLOGY, vol. I, No. III.)

At the conclusion of this paper the time for adjournment had arrived, but upon motion of Dr. Rumbold the Association continued in session and the paper was discussed.

Remarks upon Dr. Robinson's Paper.

Dr. SMITH remarked that Dr. Robinson had mentioned two or three instances where rapid improvement had followed tracheotomy in non-specific ulceration of the larynx. In one case of his own, stenosis had taken place to a considerable extent, and it was impossible to get the ulceration to heal. Tracheotomy was performed, and healing of the ulcers took place in a very few days thereafter. This occurred some four or five years ago, and had been the text for his urging tracheotomy in tubercular laryngitis, as well as in the cases recommended for operation by Dr. Robinson. It was a very interesting fact that, while we supposed the movements of the glottis in respiration to be entirely automatic, nevertheless they seem to have a purpose and to cease when no longer required for that purpose. Thus the attempt at rotation to the arytenoid cartilage gradually ceased after its object had been superseded by the operation of tracheotomy.

Dr. SHURLY inquired if any physical examination of the chest had been made in the case of stenosis mentioned by Dr. Smith.

Dr. SMITH replied that there had been, and as a proof that the affection was not tubercular, the patient had since earned her living at the wash-tub.

Dr. BOSWORTH said, that Dr. Robinson had alluded to a case of his own that illustrated the value of tracheotomy. The patient was a German with syphilis of long standing. There being steno-

sis, he performed tracheotomy *in extremis*, and after the operation the patient seemed to come under the influence of remedies almost like magic, but the stenosis progressed nearly to the complete occlusion of the larynx. He tried the use of laryngeal dilators, but with no good results. A year ago he abandoned all interference, and since then the patient's voice had begun to improve. He had had two cases of tracheotomy in laryngeal phthisis, and in both cases a marked benefit followed the operation. One patient died ten days after the operation. Previous to its performance his sufferings were very great, but subsequently, his limited life was one of comparative comfort. The second operation was performed upon a patient in the second stage of laryngeal phthisis, and the improvement seemed very marked for three months. After that time the laryngeal disease progressed, and the case pursued a course very similar to an ordinary case of pulmonary phthisis, though this latter condition, if it existed, was not detected.

Dr. KNIGHT remarked, that although he would agree as to the value of rest in acute diseases, yet he was disposed to differ with him in reference to its value in chronic catarrhal affections of the larynx. He thought these latter cases were often better for exercise ; and he was fully convinced that professional people, thus affected, frequently would be benefited by the continuance of a certain amount of exercise of the voice. It should, however, be regulated by the physician. In regard to tracheotomy, he thought that its performance should depend upon the existence of a curable condition ; that was to say, if you had an incurable case of consumption, it was better to let the patient die without an operation, for the tracheotomy tube was only an additional misery. In a case of syphilis where there was every hope of cure, it should be done. In a case of laryngeal phthisis, it might be done when there was a chance of a long arrest ; but he would not perform it when the patient was nigh unto death. He had had a case where a beautiful young lady's life was prolonged three weeks by the operation, but they were three weeks of suffering.

Dr. ROE fully concurred with Dr. Robinson's views in regard to rest in both acute and chronic diseases. He always insisted upon rest, both in public and private singers. His experience did not coincide with Dr. Knight's. A public singer of some note had been under his care and, though rest was advised, she persisted in singing and using her voice as she had ordinarily done.

She ceased her treatment for a time, but last winter about February, having failed to obtain relief, she thought she would try treatment again. He told her this time that he would not treat her without she agreed to give the vocal cords absolute rest. To this she finally consented, and in four weeks her difficulty was almost entirely removed, so that she ceased treatment. He advised her to remain quiet two weeks longer, and as a result of her complying with his directions, her voice has remained full and clear ever since. This had been his experience with public speakers and singers. He had also found in the treatment of these diseases, that the results were usually very much more satisfactory in those who followed the trades, etc., and consequently used the voice but little.

Dr. SEILER said, that there was one point which had been overlooked in Dr. Robinson's paper, and that was, the difference between those cases where the cords alone were affected and those where the muscles were affected. Public speakers such as clergymen in whom only the vocal cords were affected—thickened—would come before their audiences with husky voices, but this condition gradually disappeared after speaking a time, not, however, without a feeling of considerable fatigue when they were through. There was another class in which there was considerable pain in phonation. and in these, absolute rest was necessary; while, on the other hand, certain cases were absolutely benefited by judicious phonation. He wished to call attention to the fact that whispering was not rest to phonation; it was an exaggerated form of exercise. There was another point: it was not only the albuminate of silver which acted as a preventive agent, but the chloride of silver formed from the combination of chloride of sodium with silver, and thus forming a coat upon the ulceration.

Dr. COHEN remarked that he agreed with every word of Dr. Robinson's, except in regard to tracheotomy, with which he had had very little experience in this connection. He was in the habit of enforcing absolute rest in public speakers and singers, and by this means alone good results could be obtained. He was much pleased with Dr. Smith's remarks calling attention to the fact that the rotation of the arytenoid cartilages gradually ceased after the operation of tracheotomy. He had also observed this.

Dr. CUTTER inquired of Dr. Cohen if he performed the operation of tracheotomy without an anæsthetic.

Dr. COHEN replied that for several years he had done so whenever it was possible.

Dr. KNIGHT called for further expression of opinion in regard to the employment of rest in laryngeal diseases; he wished to know if in a case of chronic inflammation, or even in a case of sub-acute inflammation, entire rest should be given; he would fear serious results in such instances from a very much prolonged rest.

Dr. ALLEN remarked that he had been very much interested in the discussion. While he coincided with the views which had been expressed in regard to the importance of rest, he felt that we must not overlook the dangers of over-rest. Joints could sustain absolute rest for only a short time without becoming affected thereby. By resting a long time the articular surface became changed, becoming less elastic and more vascular, so as to give rise to pain upon motion. Now, applying this to the larynx, you would find that using the cartilages after prolonged rest would soon give rise to weariness. He feared that there was danger in prolonged, absolute rest of the larynx as well as of the joints. He believed that qualified rest was necessary. He inquired as to what constituted rest to the larynx, and stated that rest from phonation did not necessarily constitute rest of the larynx.

Dr. ROE remarked that the rest which he meant was rest from active use of the voice during the active treatment of the disease. In his experience he had found that rest in these cases was necessary in order to secure rapid recovery. Particularly was this true in cases of public speakers and singers.

Dr. ROBINSON remarked that he did not know that he had anything further to say. He would refer particularly to a case of chronic laryngitis published in the *American Journal of Medical Sciences*, October, 1875, in which physiological phonation was restored through the agency of prolonged rest. It was this case which had directed his observation to the importance of rest in the treatment of laryngeal diseases.

There being no further discussion, upon motion of Dr. Knight, Dr. Cushing proceeded to exhibit a specimen to the association.

Dr. CUSHING remarked that the case to which he wished to call attention was, so far as he knew, very rare. A young lady had had well-marked symptoms of typhoid fever. The *post-mortem* examination showed pathognomonic typhoid changes in the intestines. He was sent for on the day the patient died. He found the pa-

tient having great difficulty in breathing, which was on the increase, there being œdema of the larynx. He was able to make an examination, but found nothing but redness and swelling, and considered the case one of perichondritis. She died that night, about four or five hours after the examination. Upon *post-mortem* examination he was surprised to find a membrane lining the larynx and trachea.

Dr. CUSHING presented a section of the trachea and larynx, showing very nicely the condition referred to. The question was: "What was it?" Türck had described a similar case, but there was no autopsy. Griesinger had described an interesting case of a young lady having the rose-colored spots upon the abdomen indicative of typhoid fever, and in whose throat a well-developed diphtheritic membrane was found. This condition of the throat was a well-described affection following scarlet fever, but uncommon in typhoid fever.

Upon motion of the Secretary, the association adjourned at 5.30 P.M.

In the evening, the association was very handsomely entertained at a dinner given by the New York Fellows. The post-prandial exercises, entirely informal, were very enjoyable, but hardly a matter for record.

PROCEEDINGS†

OF THE

I. INTERNATIONAL CONGRESS OF LARYNGOLOGY.

The first International Laryngological Congress, which met at Milan, September 2d to September 5th, 1880, was a complete success, both from the authority and number of its members, Italian and foreign, who were present, and from the importance of the works presented.

The names of gentlemen who were invited and who approved the meeting are given below. Those marked with an asterisk were present: *Ariza, Madrid; *Baréty, Nice; *Blanc, Lyons; *Bellmunt, Gijon; *Lennox Browne, London; Brügelmann, Cologne; Biermann, San Remo; Boeckel, Strasburg; Bristowe, London; Burow, Königsberg; Breccia, S. Casciano; Battaglia, Cairo; Breda, Padua; Bayer, Brussels; Beschorner, Dresden; *Capart, Brussels; J. Solis Cohen, Philadelphia; Cutter, Boston; *Catti, Fiume; Cazenave de la Roche, Eaux Bonnes; *Cervesato, Rovigo; *Caselli, Reggio; *Del Castillo, Cordova; *De Albertis, Genoa; Heming Douglas, London; *Elsberg, New York; Fränkel, Berlin; Fürbringer, Amsterdam; *Frua, Milan; Foulis, Glasgow; Fieber, Vienna; *Fournié, Paris; Fränkel, Hamburg; *Grazzi, Florence; Guinier, Cauterets; *Gouguenheim, Paris; Ganghofner, Prague; Gentile, Naples; *Gottstein, Breslau; Gerhardt, Würzburg; Garretson, Philadelphia; *Heinze, Leipzig; *Hering, Warsaw; *Hartman, Baltimore; Gordon Holmes, London; Ingals, Chicago; Isenschmid, Munich; Prosser James, London; Johnston, Baltimore; *Joly, Lyons; Jelenffy, Budapest; Jurasz, Heidelberg; Keller, Cologne; *Karwowski, Warsaw; Knight, Boston; Knoll, Prague; *Kleczkowski, Warsaw;

† The papers read, published *in extenso*, will be noticed in a future number of the ARCHIVES.—ED.

*Krishaber, Paris ; Koch, Luxembourg ; *Labus, Milan ; Lahillone, Pau ; Lange, Copenhagen ; Lefferts, New York ; *Loewenberg, Paris ; Lincoln, New York ; *Llewelyn Thomas, London ; Michel, Cologne ; *Massei, Naples ; Mackenzie, London ; *Masucci, Naples ; Mandl, Paris ; Margary, Turin ; *Mañé, Barcelona ; Mermagen, Mannheim ; Moura, Paris ; Moure, Bordeaux ; *Morra, Naples ; Navratil, Budapest ; *Nicolai, Milan ; Nicolas-Duranty, Marseilles ; *Nager, Lucerne ; Pel, Amsterdam ; Porter, St. Louis ; *Perkins, Baltimore ; *Pulido, Madrid ; Beverly Robinson, New York ; Rühle, Bonn ; Ruppaner, New York ; *Ramon de la Sota, Seville ; Rochelt, Meran ; Rumbold, St. Louis ; *Rossbach, Würzburg ; *Ruggi, Boulogne ; Rauchfuss, St. Petersburg ; Rühlmann, St. Petersburg ; Schrötter, Vienna ; Steffin, Stettin ; Sawyer, Birmingham ; *Stoerk, Vienna ; Schüller, Greifswald ; *Schnitzler, Vienna ; Sidlo, Vienna ; Shurly, Detroit ; Schaeffer, Bremen ; *Schmidt, Frankfort ; Schiffers, Liége ; Semon, London ; *Semple, London ; Schmidthuisen, Aix-la-Chapelle ; Smyly, Dublin ; Seiler, Philadelphia ; Tauber, Cincinnati ; *Thaon, Nice ; *Urbino, Florence ; Voltolini, Breslau ; Vacher, Colls ; Wagner, New York; Woakes, London ; *Zawerthal, Rome ; Zeim, Dantzic.

The inauguration session was opened at noon, September 2d, with an address by M. Labus, Chairman of the Committee of Arrangements, in the presence of the Prefect of the Province, as the representative of the Italian government, and the Mayor of the city. M. Labus, in the name of Milan and Italy, thanked his distinguished *confrères* who, in response to his invitation, had come from all parts of the civilized world, and whilst admiring the rapid development of laryngology attained by the isolated work of his colleagues, inferred that by the united work which would be accomplished by the periodical reunions of the Congress, laryngology would soon hold that place in science to which it is entitled by its importance as well as by the fertility of its field and the ardor of its workers,

Dr. LABUS announced that the Belgian Minister of the Interior had sent Dr. Capart, of Brussels, as a representative of his government ; the American Laryngological Association had delegated Drs. Elsberg, Hartman, and Seiler to represent it, and that the Italian Society of Hygiene, wishing to be represented, had appointed himself.

Dr. LABUS presented an order of exercises which, after some amendment, was approved.

On motion of Dr. Schnitzler, Dr. Labus was chosen President of the Congress by acclamation.

On motion of Dr. Massei, Drs. Elsberg, Krishaber and Stoerk, who had been members of the committee of arrangements, were chosen Vice-Presidents by acclamation ; and Dr. Ariza was added to the list of Vice-Presidents by vote.

Drs. Frua, Urbino and Zawerthal, were chosen Secretaries.

These preliminaries being finished, the order of the day was taken up. A letter from Dr. Mandl was read, apologizing, on account of ill health, for the absence of his promised paper on Comparative Laryngology.

Dr. Fournié then made his communication on the "Vox Eunucoides," which he defined as being characterized by a diapason much higher than the stature, age, and sex of the persons affected normally warrant. It is due to the irregular and unsymmetrical development of the different parts of the larynx, at the period of commencing sexual activity of the individual. The treatment consists in respiratory and vocal gymnastics, which has completely succeeded in the course of two or three weeks in all of the thirteen patients whom Dr. Fournié has had to treat during the past fifteen years. He spoke of the different theories of the formation of the voice, and said that he was convinced from experiments and from reasoning that the vocal sonorous vibrations are produced by the mucous membrane which covers the cords.

Dr. Krishaber did not admit the theory of M. Fournié, and affirmed that the vocal cords were capable of producing sounds even when deprived of their mucous membrane. He related his experiments on cats with reference to the intensity of the voice, by which he had demonstrated that the primary sound made by the larynx is always weak, and acquires its intensity as well as timbre from the pharyngeal cavity, which acts as a resonator.

Dr. Schnitzler expressed the opinion shared by the majority of the members of the Congress, that the production of voice is not so simple a matter as Dr. Fournié described, and that his theory of the vibrations of the mucous covering of the vocal bands cannot be sustained, although, as a matter of course, the voice is altered or destroyed when the vocal bands are deprived of their mucous membrane.

Dr. Ramon de la Sota read a communication on the "pathological action of tobacco on the throat," The changes produced appear, according to him, under the three forms: 1. Angina

nicotinica erythematosa, a simple redness of the mucous membrane ; 2. vesiculosa, characterized by little vesicles which burst and give much pain, observed especially in cigar smokers, and 3. granulosa, in which the follicles are involved, which may extend to the whole pharynx, uvula, and even to the larynx, and which is accompanied often with extravasation of blood in the tissue. The treatment is cessation of the cause and the use of mucilaginous lozenges.

Dr. HEINZE spoke of a rare case of "laryngeal stenosis produced by syphilitic adhesion of the epiglottis to the posterior wall of the pharynx." The adhesion was separated by the repeated use of the galvano-cautery, but at the third application, the hemorrhage which ensued was so serious as to necessitate the ligation of the external carotid. The patient made a good recovery however.

Dr. CATTI made a communication on "anchylosis of the crico-arytenoid articulations, and paralysis of the posterior crico-arytenoid muscles." The author concluded that this form of paralysis, though certainly occurring, is very rare ; that in making a diagnosis the possibility of articular anchylosis must always be borne in mind, and that this condition has doubtless often been mistaken for the former. Ulcerative processes in the neighborhood may produce immobility of the cords and subsequent atrophy. Dr. Stoerk related a case confirmatory of Dr. Catti's views. Dr. Massei remarked that in cases of perichondritis, the most important factor of the immobility of the cord is infiltration of the tissues.

Before adjournment, in accordance with the proposition of Dr. Elsberg, a commission was appointed to establish a uniform laryn gological nomenclature, both anatomical and nosological. The commission consists of Dr. Elsberg, chairman, and Drs. Krishaber, Stoerk and Mackenzie, and is to make a report to the Second International Laryngological Congress.

The second day's session was opened at 9 o'clock A. M., September 3d.

The President laid before the Congress works which had been forwarded by Drs. Moura, Guinier, Brügelmann, Urbino, Lefferts, Vacher, Morra, Breda and Caselli ; and also instruments presented by different gentlemen, viz., a manikin for laryngoscopy, by M. Isenschmid ; a laryngoscope, by M. Schæffer ; an apparatus for the oxyhydrogen lime-light, by M. Lennox Browne ; a manikin for laryngoscopic apparatus, by M. Labus ; an instru-

ment for the extirpation of transverse pathological membranes in the air-passages, by M. Fieber; and instruments for the removal of adenoid vegetations in the naso-pharyngeal cavity, and different pathological specimens, by M. Lange.

The communications which had been sent by members unable to attend, were distributed among several of those present, with the request that they would report upon them.

Dr. THAON then presented his communication on "hysteria and the larynx." The larynx is a seat of predilection in hysteria, which shows itself in four forms: aphonia, spasm, hyperæsthesia, and anæsthesia. These forms may be associated with hysterical phenomena in other portions of the system, or occur without such complications. Each form was taken up separately. Apropos of treatment, the author insisted upon the recently-introduced metallotherapy; hypodermic strychnine injections and cutaneous counterirritation in aphonia; chloroform inhalation, and, in extreme cases, tracheotomy in the graver spasms; local applications of nitrate of silver solutions, and subcutaneous morphine injections in hyperæsthesia; and local irritation in anæsthesia. Of anæsthesia, Dr. Thaon said that it is the most rare of the laryngeal forms of hysteria; it is most characteristic as it manifests itself in the epiglottis, and the touching of the laryngeal mirror alone is sometimes sufficient to restore the parts to healthy sensation.

Dr. KRISHABER considered the danger in hysterical spasm more apparent than real, even though the spasm may be very severe and suffocating. He denied the necessity of tracheotomy, and thought that the spasm would always relax.

Drs. GOUGUENHEIM and SCHNITZLER, on the contrary, believed that in certain cases tracheotomy was necessary to save the life of the patient.

Dr. LENNOX BROWNE, in this connection, spoke of the existence of certain organic changes which are sometimes associated with the nervous derangement known as globus hystericus. Among these changes he mentioned hypertrophy of the thyroid gland and the exaggerated development of the papillæ at the base of the tongue.

Dr. MASSEI made a comparison between the use of the Faradaic and continued currents in vocal paralysis. In hysterical paralysis the Faradaic is usually used; but he said it was not a matter of indifference whether we used one or the other; in some cases the constant current gave good results when the Faradaic

had no effect. Again, the Faradaic current might aid the constant, being alternated with it, but it could not replace it. The difference in action of the two currents was essentially founded on the excito-motor action of the Faradaic, and the electrolytic and electrotonic action of the galvanic current ; consequently the choice must be made after one has recognized the ultimate cause of the paralysis.

At the close of the session, Dr. KRISHABER gave an account of his method of "intercrico-thyroid laryngotomy." He said that the crico-thyroid space, being situated higher and more superficially than the trachea, is infinitely more accessible than the latter. The membrane being elastic, this space even in children admits of the introduction of a much larger canula than might be supposed. Dr. Krishaber has a series of eight calibers of canulas adapted to each individual's age and length of body. The landmarks are very clearly defined in the region he recommends for operation. The incision necessitated by operation in the crico-thyroid space is very limited, and once the skin has been divided, whether by the bistoury or thermo-cautery, the cavity of the larynx can be penetrated by a simple puncture. Dr. Krishaber exhibited the canulas which he uses. A common canula is provided with a "canula conductrix," which serves as an internal canula during the operation. This "canula conductrix" projects beyond the external canula by a flattened conical beak, which is almost sharp at its extremity. It is, furthermore, well opened on the two sides so as to allow respiration. In consequence of its beaked shape it is as easily introduced as a dilator, which consequently becomes useless. For cases of hemorrhage there is a flexible, spiral canula, which, having no shield, is held in place by means of a simple thread, and does not hinder the surgeon from seeking for the vessels which bleed.

Dr. STOERK made some objections to the method of Dr. Krishaber, and said that he preferred that followed in Germany of cutting the tissues methodically by layers, assuring himself in regard to every slight hemorrhage. M. Stoerk then took the opportunity to show several instruments made according to his directions by Reiner, of Vienna. These were especially forceps for operations in the naso-pharyngeal space, his last model of snare and guillotine, his canulas for tracheotomy, and an apparatus for dilatation in cases of stenosis.

Drs. ZAWERTHAL and ELSBERG, while agreeing with Dr. Kris-

haber in considering the operation in the crico-thyroid space very easy and advantageous, referred to the fact that in many cases an operation lower down is absolutely indicated in order to get below the obstruction to respiration, while in other cases respiration may often be freed endolaryngeally *per viam naturalem*, without any cutting operation at all.

A second session on the same day (September 3d) was opened at 2 P. M.

Dr. MASUCCI offered some considerations on "spasm of the glottis in the adult," and especially with reference to its etiology. He related a case in which severe attacks had been caused by a subglottic fibroma, which, on account of its seat and small size, was not easy to be seen in the laryngoscope.

Dr. BARÉTY read a paper on "laryngitis stridula," which he considered as a symptom of acute swelling of the tracheo-bronchial glands, and treated with cod liver oil.

Dr. MASSEI observed that, without doubting the anatomical observations of M. Baréty, he considered laryngitis stridula as a catarrhal laryngitis of children characterized by accesses of suffocation, occurring especially in the night.

Dr. ROSSBACH spoke of his method of "percutaneous operation for the removal of endolaryngeal neoplasms, especially cystic tumors," and presented the instrument which he used, which resembled the cataract needle.

Dr. STOERK admitted that one could operate well with such an instrument, provided that he entered the larynx on the median line, but said that on the other side there was a possibility of hemorrhage from injury of the branches of the superior thyroid artery.

Dr. SCHNITZLER related an interesting clinical history of an "endolaryngeal operation during narcosis" with sulphuric ether in a child of eight years, who had a very large papilloma in the ventricle of Morgagni.

Dr. STOERK admitted the occasional value of such a procedure when one had to deal with children.

Dr. CAPART spoke a few words on the mixed method of laryngeal anæsthesia—painting the larynx with a solution of morphia, and then giving a limited inhalation of ether.

Dr. ZAWERTHAL did not believe in a true local anæsthesia by means of the Türck-Schrötter method and depreciated anæsthesia for endolaryngeal operations altogether.

Dr. CATTI maintained that he had seen several cases in which local anæsthesia had given good results.

Dr. ROSSBACH explained his method of laryngeal anæsthesia, which consisted in the hypodermic injection of six milligrammes of hydrochlorate of morphia on the two sides of the larynx on a level with the point of entrance of the superior laryngeal nerve.

Dr. KRISHABER doubted whether local anæsthesia could be produced by such injection, and thought rather that narcotic action must be general.

After the discussion on local anæsthesia, Dr. CAPART spoke on "hypertrophy of the tonsils, considered especially with reference to treatment." After some words on electrolysis in the cure of this affection, he declared himself in favor of removal, and presented a tonsillotome modified by himself, an oblique guillotine turning on itself in such a way as to serve indifferently for the right or left side.

Dr. KRISHABER said that he had tried with advantage, after the example of Cazin de Berck, ignipuncture with Paquelin's thermo-cautery, but repeated applications are necessary to accomplish the object.

Dr. ELSBERG showed how the tonsillotome cuts *in one plane* whatever is caught in its opening, and may, therefore, on the one hand, cut through the hypertrophied and degenerated tonsillar tissue without removing all that is necessary, and thus cause much hemorrhage and other disadvantages; and, on the other hand, exsect portions of the mucous membrane, and even muscular fibres of the palatine folds, and thus cause unnecessary injury, hemorrhage and pain. In the first case the operation often fails of its object, and has to be repeated sooner or later; in the other, adhesions of the anterior and posterior folds, either to one another or to other tissue, form, which render the operation even worse than mere failure. The bistoury enables the surgeon to dissect out the tonsils from between the palatine folds without injuring the latter, and Dr. Elsberg uses the tonsillotome only in small children and other exceptional cases in which both the knife and galvano-cautery are inapplicable. He gave directions for pushing the tonsil into the ring of the instrument from the outside of the neck, and for guarding against secondary hemorrhage.

Dr. SCHNITZLER referred to several cases of fatal hemorrhage from amputation of the tonsils. He never uses the knife, and considers the danger of hemorrhage sometimes unavoidable.

Dr. Lennox Browne contended that this danger is far less than many of the specialists present thought. He always uses the guillotine.

Dr. Schmidt declared that he would never extirpate a tonsil with any cutting instrument whatever.

Dr. Massei said he appreciated the remarks of Dr. Elsberg, as he has convinced himself that hemorrhage often proceeds from the tissue of the tonsil itself.

Dr. Schmidt next gave the results of his later observations on the "treatment of phthisis laryngea," and spoke of his method of promoting the expulsion of carious arytenoid cartilages by means of an incision made with special scissors, which he exhibited. Furthermore, he admitted the possibility of the cure of phthisis laryngea.

Drs. Schnitzler, Stoerk and Gouguenheim coincided in this view, while Dr. Krishaber denied the possibility of a real cure, going so far as to say that whenever he found a supposed tuberculous ulcer to cicatrize, he doubted the diagnosis.

Dr. Catti remarked that the subject was too important to be discussed thus incidentally, and proposed that a session of the next Congress be devoted especially to it, a proposition which was adopted.

Dr. Ariza made a communication on a certain form of laryngopathy, which he called "gastric laryngitis," on account of the relation which he had found between certain gastric manifestations and laryngeal symptoms in some patients who, by an aberration of sensation, located all their sufferings in the larynx. On curing the gastric trouble, the laryngeal disappeared.

Dr. Lennox Browne spoke upon "tuberculosis of the tongue, mouth and pharynx," the cure of which he believed to be possible.

Dr. Gouguenheim spoke upon "the syphilitic mucous patches of the larynx." They present themselves in three forms: the erosive, the typical circular, and the excavated; the first especially on the free edge of the epiglottis, and the second on the upper surface of the vocal cords. The third form is sometimes very difficult to diagnosticate. The treatment must be both general and local.

Dr. Krishaber praised the exactness of Dr. Gouguenheim's observations, and Dr. Schnitzler agreed that the appearance of the laryngeal "plaque muqueuse" is so characteristic as to suffice

by itself for the diagnosis when the other manifestations are wanting. The session adjourned at 6:30 P.M.

On the 4th of September the members of the Congress took part in an excursion tendered by the city of Milan, on Lake Como.

The fourth session was opened at 9 A.M. on the 5th of September. The minutes of the proceedings of the previous sessions were read and accepted, and then after a brief discussion it was decided that the second International Congress of Laryngology should be held in Paris, in September, 1882. MM. Krishaber, Fournié and Gouguenheim were chosen a committee of arrangements. Different members then reported upon the communications of absent gentlemen, which had been referred to them at the second session, as follows :

Dr. SIDLO. On the treatment of pharyngeal diphtheria with the knife. Reporter, Dr. Catti.

Dr. KOCH. Ignipuncture in affections of the respiratory primæ viæ. Reporter, Dr. Krishaber.

Dr. MOURA-BOUROUILLOU. Millimetric statistics of the different parts of the vocal organ. Reporter, Dr. Fournié.

Dr. SCHMIDTHUISEN. Restoration of the voice after ten years' loss, by the aid of rhinoscopy. Reporter, Dr. Elsberg.

Dr. BATTAGLIA. Effect of resection of the laryngeal nerves on the vocal function, and on the mechanism of respiration. Reporter, Dr. Masucci.

Dr. CUTTER. On the nature of the croupal membrane. Reporter, Dr. Zawerthal.

Dr. CORNILLEAU. Treatment of diphtheria by the preparations of oxalic acid. Reporter, Dr. Labus.

Dr. CAZENAVE DE LA ROCHE. Granular pharyngitis. Reporter, Dr. Grazzi.

Dr. PROSSER JAMES. Stammering of the vocal cords. Reporter, Dr. Grazzi.

Dr. MOURE. Study of cysts of the larynx, and especially cysts of the epiglottis. Reporter, Dr. Labus.

Dr. PROSSER JAMES. Phthisis laryngea. Reporter, Dr. Labus.

Dr. RUMBOLD. Chronic inflammation of the larynx, and its treatment. Reporter, Dr. Stoerk.

Dr. RUMBOLD. Instruments for making applications to the

nasal and naso-pharyngeal cavities, to the pharynx and larynx. Reporter, Dr. Stoerk.

Dr. Porter. Excision of the epiglottis. Reporter, Dr. Schmidt.

Dr. Fieber. A new instrument for extirpation of transverse pathological membranes in the air-passages. Reporter, Dr. Hering.

Dr. Bristowe. Compression of the trachea and recurrent nerves, and its effect. Reporter, Dr. Capart.

Dr. Breccia. Electro-photographic laryngoscopy. Reporter, Dr. Morra.

The reports on these papers being completed, Dr. Krishaber spoke on "spasm of the glottis in locomotor ataxia." He distinguished three forms in which the spasm occurs, *i.e.*, in the form of a cough of a convulsive character; in the form of an access of suffocation which goes almost to a loss of consciousness, with convulsive epileptiform movements; and, finally, in the form of an access of suffocation, so severe as to threaten asphyxia. There is much analogy between these laryngeal phenomena and the form described by Charcot under the name of vertigo laryngis; one of its characters is intermittence, and with the laryngoscope one can settle the fact that the occlusion of the air-passages is due to a true spasm of the constrictors of the glottis, and not to a paralysis of the dilators.

Dr. Elsberg spoke on "simple erosions of the epiglottis," which he had often found associated with violent, obstinate cough, and which disappeared in a short time under applications of solutions of nitrate of silver or chloride of gold.

Dr. Ariza read his essay on "phthisis laryngea idiopathica," and on the objective signs revealed in the laryngoscope. The author believes that laryngeal phthisis arises from tuberculosis of the larynx, whether the latter be primary, or, as is oftener the case, secondary to the same disease in the lungs. He recognizes different varieties, particularly the two, fibroid and hypertrophic (or polypoid) laryngeal phthisis. As to the latter, it is sometimes very difficult to distinguish it from untubercular polypus, but the diagnosis is very important, because the phthisical excrescence must on no account be operated upon. Among the conclusions drawn are the two, viz.: laryngeal polypoid tuberculosis is idiopathic, and tuberculosis of the larynx is not incurable.

Dr. Zawerthal followed with a mémoire on the "anatomical

and clinical characters of tuberculosis of the pharynx." As points where tubercular infiltration is very frequent on account of abundance of follicular glands, the author designated the tonsilla pharyngea, the neighborhood of Rosenmüller's fossa, and the roof of the naso-pharyngeal cavity; the back of the velum, the preferable seat of syphilis, remains free. According to Dr. Zawerthal, tuberculosis of the pharynx, which consists in the deposition of miliary tubercles, is never primary, but always preceded by pulmonary tuberculosis. He stated that clinical observation shows a great affinity between phthisis and scrofulosis.

Dr. Löwenberg then communicated the clinical history of a case of "myxo-sarcoma of the pharynx" in a little girl five years old; a large portion of the tumor was removed by the finger during the examination.

At the end of the morning séance, Dr. Caselli related a case of complete extirpation of the larynx, pharynx, base of tongue, soft palate and tonsils, the clinical history of which he has published in the *Bullettine delle Scienze Med. di Bologna*, serie vi, vol. v, 1880. The patient was presented to the Congress, and performed with ease the processes of swallowing, speaking audibly and intelligibly, taking out and replacing the various apparatus, etc. The audacity of the operation, its success, and the ingenious construction of the canula for phonation, excited the admiration of all.

The closing session of the Congress was held September 5th, at two o'clock.

Dr. Frua read a paper on the "treatment of plaques muqueuses of the pharynx," insisting upon the superior benefit to be derived from preparations of iodine and mercury combined.

Dr. Urbino, delegated by Dr. Ruggi, who was obliged to be absent, then reported two operations, one, of a "laryngotomy performed in a case of sub-glottic tumor," in which the patient having been chloroformed, the head was made to hang backward over the edge of the table, in order to prevent the entrance of blood into the air-passages, the patient being discharged cured in 24 days; and the other, an extirpation of an enlarged thyroid gland in a girl, who also made a good recovery.

Dr. Labus communicated his observations on the "influence of the relaxation of the uvula on the voice." The different movements made by the uvula in intonation were described, and the inference drawn that as the uvula is situated in the resonating

chamber of the voice, its inability to execute its natural movements must necessarily alter the voice in its intensity and timbre. Excision, in cases of relaxation, after astringents, such as chloride of iron, have failed, restores the lost qualities of the voice. Drs. Fournié and Elsberg made some observations on the function of the uvula, and Drs. Capart, Lennox Browne, Blanc and Elsberg, spoke of uvulotomy, the instruments with which and the manner in which it should be performed, and the possible accidents attending the operation.

Dr. MORRA then read his essay on "laryngeal croup and its identity with diphtheria." He contended, 1st, for the pathological identity of the two forms; 2d, that anchylosis of the crico-arytenoid articulation is the principal cause of the stenosis of the larynx; 3d, that the treatment ought to be chiefly local.

Dr. HERING related an important case of "paralysis of the posterior crico-arytenoid muscles," followed nine months afterward by symptoms of "labio-glosso-pharyngeal paralysis" of bulbar origin, which, there was every reason to believe, was due to syphilis.

Dr. CERVESATO spoke of "cysts of the larynx," showing that they are, in the great majority of cases, produced by the retention of the secretion of the mucous glands, especially during chronic catarrh of the pharynx or larynx. They are usually situated on the epiglottis and cords, and their existence is not so rare as generally believed. The presence of glands in the mucous membrane which covers the vocal cords, having been proved by recent observations, the etiology and pathology of these cysts have been cleared up. Where bursæ exist the cystic tumors are hygromas.

Drs. ZAWERTHAL and MASSEI expressed themselves as being of the same opinion as Dr. Cervesato.

Dr. MASSEI next read his "contribution to the study of diseases of the ventricle of Morgagni." The prolapse of the mucous membrane which covers the ventricle, tuberculous and syphilitic ulcerations, perichondritis of the thyroid cartilage, and tumors (cysts, epitheliomas, sarcomas, etc.), are the forms of disease found in the ventricles of Morgagni, and which, especially in their early stages, present difficulties of diagnosis. All these were discussed at considerable length.

Dr. LLEWELYN THOMAS presented his communication on the "treatment of varicose veins of the mouth, pharynx and larynx," the significance and importance of which have not been fully ap-

preciated, and which are often the effect and not the cause of many diseases of these organs. Among the means employed to destroy them he gives preference to the acid nitrate of mercury.

Dr. ZAWERTHAL then spoke of "a special form of hereditary syphilis of the larynx" in children, which, on account of its local aspect and the general condition of the patient, might easily be mistaken for tuberculous laryngeal trouble; but objective signs, as well as the success of specific treatment, prove its syphilitic nature.

Dr. MASUCCI read a paper on the employment of "nasal douches of compressed air," simple and medicated, according to the method of Dr. Massei. He uses the apparatus of Waldenburg. The air can be used pure or mixed with some volatile substance (turpentine, carbolic acid, etc.) This method not only medicates the mucous membrane in blenorrhœa, etc., but it mechanically dilates the nasal cavity in cases of stenosis.

Dr. CAPART spoke of "the influence of the diseases of the nasal tissue and naso-pharyngeal cavity on the larynx and trachea." Supported by many observations, he showed the facility with which pharyngitis sicca is propagated to the larynx, and called attention to the possibility of a reflex influence on the vaso-motor nerves of the larynx.

The order of the day being completed, after a few closing words from the President, and from Drs. Fournié and Elsberg, thanking him, on behalf of the members of the Congress, for the courtesy and intelligent skill displayed in preparing and conducting the meetings, the Congress adjourned *sine die*.

FRUA,
ZAWERTHAL, } *Secretaries.*

QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

I.—LARYNX.

1. Baréty, A. On stridulous laryngitis, or false croup. Considered as one of the symptoms of acute engorgement of the tracheo-bronchial lymphatic ganglia. *Ann. des Mal. de l'Oreille et du Larynx*, November, 1880. (See Proceedings 1, International Congress, Archives p. 382.)

2. Boisson. A contribution to the study of the laryngeal complications of pulmonary phthisis. Paris, 1880, 42 pp., 4°, No. 297.

3. Bosworth. Bilateral paralysis of the abductor muscles of the larynx. *N. Y. Med. Journal*, November, 1880.

4. Bouchereau. A study of secondary syphilitic laryngitis. *Thèse de Paris. Ann. des Mal. de l'Oreille et du Larynx*, September, 1880.

5. Browne. A new form of lime-light apparatus for use in the examination and treatment of laryngeal, aural, nasal and ophthalmic cases. *The Specialist*, London, vol. i, No. 1, 1880.

6. Bruns. On resection of the larynx for stenosis. *Berlin Med. Wochensch.*, Nos. 38, 39, 1880.

7. Cadier. A manual of laryngoscopy and laryngology. Paris, 1880. Delahaye. Reviewed. *Lyon Med.*, No. 41, 1880.

8. De Bermitz. Laryngo-pharyngeal anæsthesia. *Gaz. de Hôp.*, April 3, 1880. *Med. Gaz.*, September 11, 1880.

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3. **Bilateral paralysis of the larynx.** The main interest of Bosworth's article lies in the history of the cases of the affection, which he has gathered from various sources, and grouped together, adding some that have recently been put upon record, and are not found in the older text-books.

5. **A new lime-light apparatus for laryngoscopy.** Browne recommends this new form of apparatus which he has devised (and which is pictured and described in the original article) for general use on the following grounds:

A. It is exceedingly simple, and being arranged so as to fix on to the ordinary gas standard employed at present, does not require any cumbersome arrangement of lantern. Should the light temporarily fail from any cause—breakage of the lime, or the oxygen being exhausted—and another supply not be to hand, the whole can be unshipped in two minutes, and the gaslight be made immediately available.

B. It can be used either as a direct light or with the usual frontal or hand reflector.

C. The absorption of the calorific rays diminishes the amount of heat thrown out to considerably less than that from an ordinary Argand gas-burner.

D. The igniter and dissolver economise the oxygen by a movement most simple and easy to the operator. This arrangement also assists greatly in diminishing the amount of the heat of combustion.

E. The first cost is very small. The expense of the one fixed at the Central Throat and Ear Hospital, including all connections, cost of two bags of oxygen, retorts, etc., for making gas, is only £16 ($78.00).

F. The cost of the gas, made from the heating of chlorate of potash and

peroxide of manganese, does not exceed 30 cents per bag, holding 9 feet of gas.

If the operator is careful to shut off his oxygen the moment he finishes his examination—a matter which is simply one of habit—the amount of gas consumed does not exceed 2 feet per hour in hospital practice, in which time at least 20 to 25 patients can be examined. In other words, the cost of the light, inclusive of the hydrogen, is not more than 4 cents per hour.

G. The apparatus is ABSOLUTELY SAFE, the oxygen and hydrogen being conveyed in separate tubes even to the point of ignition.

6. **Resection of the larynx for stenosis.** The treatment of chronic stenosis of the larynx, is one of the most tedious and difficult operations of laryngo-surgery. Bruns does not here refer to the lighter grades, which are easily relieved by dilatation of the stricture or by incision (laryngotomia interna), but to the severe forms in which the contraction is very marked, and the stricture involves the whole interior of the larynx. Such tube-like strictures are not uncommon, and are found after extensive syphilitic ulceration, after perichondritis, and most commonly, as a complication of typhoid fever. Tracheotomy has invariably been performed and the patient is doomed to always wear the tube. Two plans of treatment are at our command in such cases: The intralaryngeal dilatation by means of bougies (Schroetter), and thyrotomy and resection of the larynx. The treatment by dilatation has not been attended with great success in Bruns' hands, and he has attempted it in 5 cases, for it was alone carried to such a point that the patient could breathe through the larynx, with his tracheotomy tube closed. Moreover, the treatment is tedious, disagreeable to the patient, and not altogether devoid of danger (œdema, abscess), and for these reasons he believes that it should be limited to relatively moderate grades of stenosis, and not attempted, certainly with any idea of success, in the narrow, undilatable, and callous form of stricture. For such difficult cases, laryngotomy and the external division of the stricture, are indicated. By its means, the operator is able not only to thoroughly inspect the anatomical relations of the stricture, but to remove or divide all cicatricial bridles and destroy granulation tissue; still further, at the time of the operation, to place in position at once a laryngeal tube of proper calibre, and reëstablish respiration through the mouth; the skin wound is closed from above, to a great extent, and cicatrization follows in the same manner as over the catheter in cases of internal urethrotomy.

But cases, again, are met with in which thyrotomy alone is not sufficient to furnish sufficient space without forcible mechanical aids. The cases are those in which loss of portions of cartilage have allowed the laryngeal walls to collapse, the organ to become deformed, or its calibre, through the production of dense adventitious tissue, to become changed or contracted to an undilatable narrow tube. Here, resection of the larynx alone will afford space for the introduction of a laryngeal tube, the removal of a portion of the anterior cartilaginous wall of the larynx transforming it into an open groove or gutter readily kept free. The operation is not a difficult one with anæsthesia; without it frequent cough will interrupt the procedures; the entrance of blood into the trachea is prevented by using the tampon canula. The ordinary section of the larynx in the median line (thyrotomy) having been made, the perichondrium, together with the overlying soft parts, on the outer and inner sides of the edges

of the divided thyroid and cricoid cartilages, is carefully dissected up, and a piece 1 *cm.* broad cut with the scissors or saw from both free cartilaginous borders; the inner perichondrium is now brought to the edge of the skin, and fastened there by a few stitches, thus closing the lateral cavities left by removal of a portion of the cartilages and insuring primary union between the outer and inner layers of perichondrium upon a given side, at the same time widening the laryngeal groove, which is left. An opportunity is then afforded to cut away all cicatricial bands, and to remove all granulation tissue,—in other words, to clear the interior of the larynx. The latter will now present the form of a semicircular channel, opening outward, its posterior wall bounded above by the arytenoid cartilages, and the finger can easily be passed upward into the pharynx. The T canula (fully described in the original article) is now placed in position, and the skin wound from above in the median line closed as far as possible over it. All the points here described are fully illustrated in the recital of an interesting case, the history of which accompanies Bruns' article.

8. **Laryngo-pharyngeal anæsthesia,** though found frequently in hysteria, may also be found in lead-paralysis, epilepsy, and in subjects of simple neuropathy. De Bermitz, in his article on hysteria, states that he has found absence of throat reflex in two epileptics out of five, and in eight cases of lead-paralysis out of sixteen. Hence the signs which hitherto have been considered pathognomonic of hysteria may be observed in other diseases, and its real value in hysteria is diagnostic, chiefly of the non-simulation of that disease.

*** The Editor greatly regrets that the publication of the remainder of Dr. Lefferts' "Report and Abstract," as well as that of "Clinical Notes" and "Reviews and Book Notices" must necessarily be deferred. The next number of the ARCHIVES (Vol. II, No. 1,) is, however, already in press. In compliance with many requests the ARCHIVES will hereafter be issued at the beginning of each quarter of the year, instead of at the end, as hitherto.

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